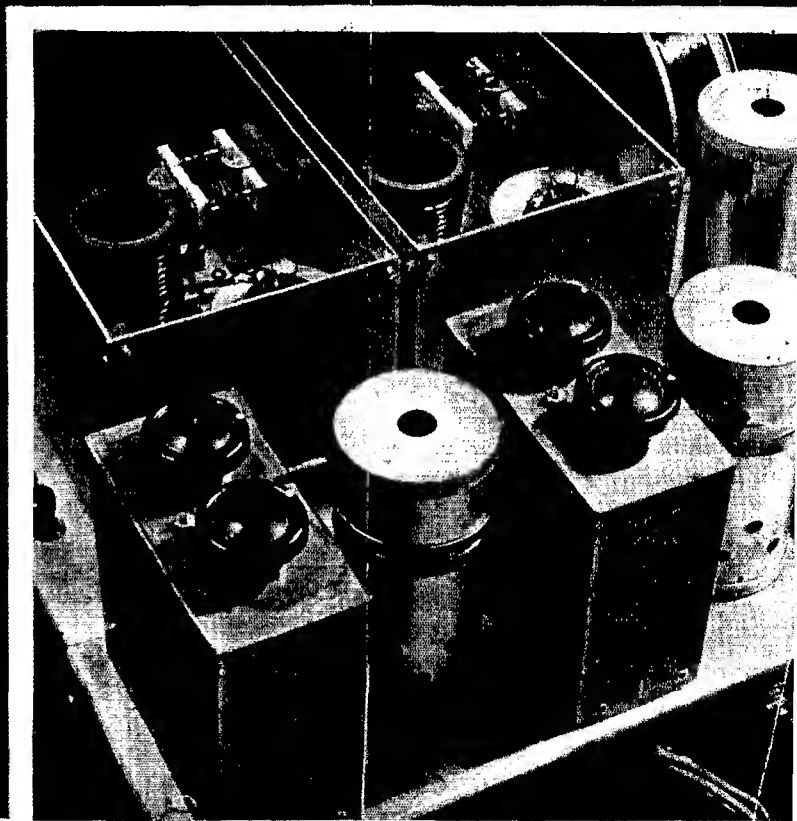
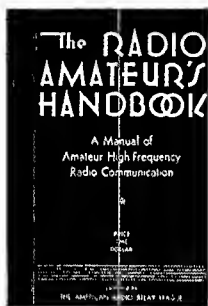


QST 

amateur radio





The Radio Amateur's Handbook

***The
World's
Standard
Authority on
Amateur Radio***

***Price One Dollar
Postpaid anywhere***

***American Radio Relay League
West Hartford, Connecticut***

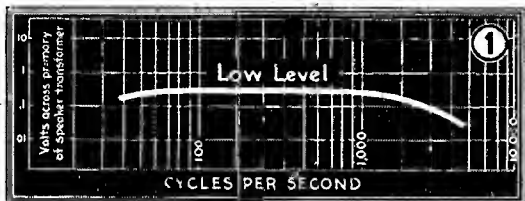
IT IS impossible to give in a small space a comprehensive description of the Radio Amateur's Handbook. The best we can do is to point out a few highlights.

It is the only really authoritative guide to Amateur Radio. First published in 1926, it has run through ten editions and fifteen printings. A total of over one hundred and ninety thousand copies have been sold. The current Tenth Edition is a complete revision. It has been almost entirely rewritten and it incorporates large amounts of new material and new illustrations. The Handbook has 240 pages and 230 illustrations. It is the work of the entire headquarters staff of the American Radio Relay League.

As an example of the thoroughness with which the Handbook treats each branch of the subject of Amateur Radio, suppose we examine the chapter headed, "Planning and Building Transmitters." We find the following subjects discussed: Types of Transmitters, Self-Controlled Oscillator Circuits, Frequency Stability and Efficiency, the Crystal Controlled Oscillator, Crystal Cuts and Grinding, the Crystal Oscillator Circuit, Crystal Mountings, from Oscillator to Antenna, Neutralizing, Transmitting Tubes, Planning the Transmitter, Building a Transmitter, Construction of the Set, Tuning the Transmitter, Coupling the Antenna, Using Two Tubes, a Push-Pull Transmitter, an Alternative Design, Building an Amplifier, Excitation for the Amplifier, Tuning and Neutralizing, Oscillator-Amplifier Combinations, a Crystal-Controlled Transmitter, Tuning the Crystal Transmitter, Operating the Doubler, a 100-Watt Transmitter, Other Combinations, a Single-Tube Amplifier, Push-Pull for High Power, Meters, Transmitter Assemblies, Other Bands, Condensers, Unsteady Signals. Forty-one illustrations appear in this chapter — and two tables, one of tubes and one of coil specifications.

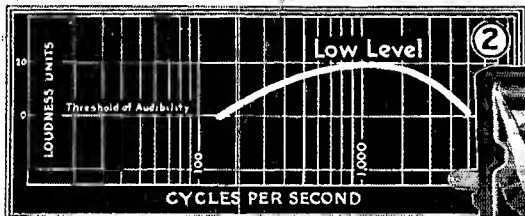
The Handbook is composed of sixteen chapters, each treating a particular subject in this same detail. The chapters are: "The Story of Amateur Radio," "Getting Started," "Electrical Fundamentals," "Radio Fundamentals," "Receivers," "Frequency Meters and Monitors," "Planning and Building Transmitters," "Radiotelephony," "Ultra-High Frequency Work," "Power Supply," "Keying and Interference Elimination," "Antennas," "Assembling the Station," "The A.R.R.L. Communications Department," "Operating a Station," "Message Handling." An Appendix containing a great quantity of useful data and a complete index complete the book.

TONE COMPENSATION—pioneered by Allen-Bradley



ORDINARY Volume Control without Tone Compensation

Curve No. 1 illustrates how all frequencies are equally attenuated when the volume is reduced with the ordinary type of volume control. Due to the characteristics of the ear, the low and high frequency tones are reduced in loudness much more than the middle register.



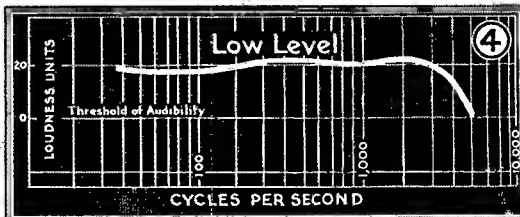
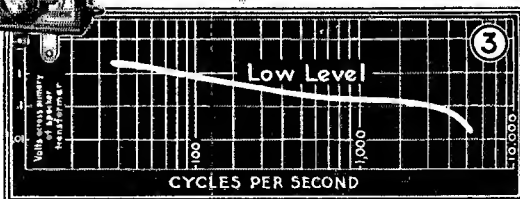
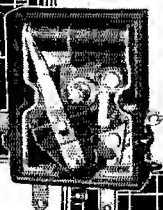
Hence, at low levels a radio set with this type of control sounds thin and unsatisfactory—a common fault of most radio receivers.

Bradleyometer Volume Control with Tone Compensation

The Allen-Bradley Company has pioneered an outstanding improvement in audio volume control. It is the Tapped Bradleyometer which does not attenuate all frequencies equally as shown in curve 3, and therefore sustains the loudness of the low and high frequency tones at reduced volume. See curve 4.

With Bradleyometer control, the receiver quality is sustained at low as well as high levels.

Allen-Bradley engineers will gladly cooperate with set manufacturers in designing low-level tone compensation systems.



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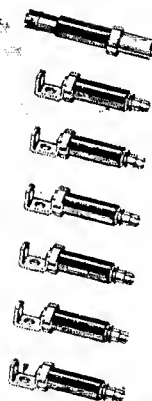
Bradleyunits are made in five sizes, with or without leads, and are R. M. A. color-coded for resistance value identification. Do not risk the reputation of your receiver with poor resistors. Use Allen-Bradley resistors and forget your resistor troubles.



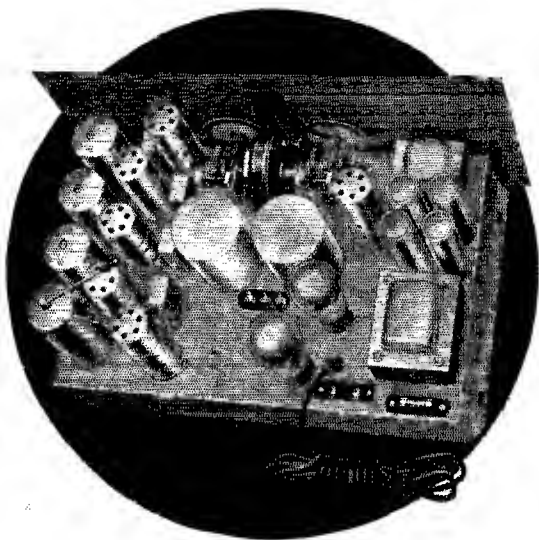
BRADLEY SUPPRESSORS

Bradley Suppressors are special solid molded resistors, used by prominent car manufacturers to provide individual resistors for each spark plug and for the common cable to the distributor on radio-equipped cars.

They increase the resistance of the high tension ignition system and minimize the disturbing oscillations in the ignition circuit which interfere with the radio receiver in the car. When used with suitable by-pass condensers in other parts of the circuit, shielded ignition cables are unnecessary.



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"AIR-TUNED" TRANSFORMERS

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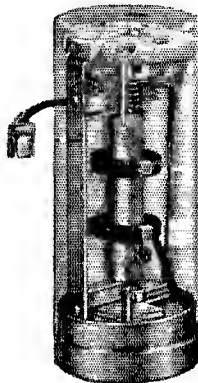
For greater output and complete elimination of hum, the new 2A5 three-watt heater-type pentode is now used in the output stage.

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devoted entirely to

AMATEUR RADIO



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APRIL
1933

VOLUME XVII
NUMBER 4

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RELAY LEAGUE, INC., is a non-commercial association of radio amateurs, bonded for the promotion of interest in amateur radio communication and experimentation, for the relaying of messages by radio, for the advancement of the radio art and of the public welfare, for the representation of the radio amateur in legislative matters, and for the maintenance of fraternalism and a high standard of conduct.

It is an incorporated association without capital stock, chartered under the laws of Connecticut. Its affairs are governed by a Board of Directors, elected every two years by the general membership. The officers are elected or appointed by the Directors. The League is non-commercial and no one commercially engaged in the manufacture, sale or rental of radio apparatus is eligible to membership on its board.

"Of, by and for the amateur," it numbers within its ranks practically every worth-while amateur in the world and has a history of glorious achievement as the standard-bearer in amateur affairs.

Inquiries regarding membership are solicited. A bona fide interest in amateur radio is the only essential qualification; ownership of a transmitting station and knowledge of the code are not prerequisite. Correspondence should be addressed to the Secretary.

A directory of the amateur societies affiliated with the League showing their times and places of meetings, is available upon request.

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THE EDITOR'S MILL

ALWAYS has *QST* been "choosey" in admitting advertisers to its columns. Many an advertising contract has *QST* rejected. As in any other business, there are bad practices in the radio trade. *QST* takes pride in avoidance of would-be advertisers who fail to meet its standards.

To follow such a policy during years of prosperity is easy. To judge the reliability of advertisers and products under abnormal depression conditions is difficult. To refuse advertising when advertising is scarce is heartbreaking. To judge always correctly is impossible.

An increasing number of letters from members of the League, which tell us of inferior or misrated merchandise or unethical business practices, has shown us the necessity for still more stringent requirements for eligibility. Accordingly, we will be even more strict, more "choosey," than heretofore.

From *QST*'s new advertising rate card, effective with this April issue, we quote as follows:

"Advertising is accepted only from firms who, in the publisher's opinion, are of established integrity and whose products secure the approval of the technical staff of the American Radio Relay League."

Those who buy from QST are secure in the knowledge that each advertiser and each piece of apparatus is approved by the American Radio Relay League.

This cannot mean that *QST* guarantees its advertisers — all business transactions are subject to normal hazards. It does not mean that only apparatus of superlative quality and consequent high price may be advertised in *QST* — price is of course a factor in judging the value of any apparatus. But it does mean that we have investigated and are confident of the honest intent of each advertiser; that each piece of apparatus is known to us and in our opinion suitable for the service for which it is intended; that the American Radio Relay League conceives it its duty to do everything within its power to prevent the exploitation of radio amateurs by firms who sell inferior and misrepresented merchandise or whose business principles are not of the highest order.

Amateurs may buy with confidence from those firms who advertise in *QST*. They are fortified by the knowledge that the League will defend the buyer's interests. In self-protection, amateurs should buy exclusively from *QST* advertisers.

Approximately half of the League's support comes from the sale of advertising space. The continuance of this support for *your* League depends on *your* support of *QST* advertisers. Directly in proportion to your patronage is the extent to which they, by their *QST* advertising, will help support the League.

F. C. B.

MEMBERS are reminded that the annual meeting of the Board of Directors will be held in middle May. Your director will be glad to have your comments and suggestions on A.R.R.L. affairs.

Cutting the Cost of Single-Signal Reception

Converting the T.R.F. Regenerative Receiver to an S.S. Superhet

By James J. Lamb, Technical Editor

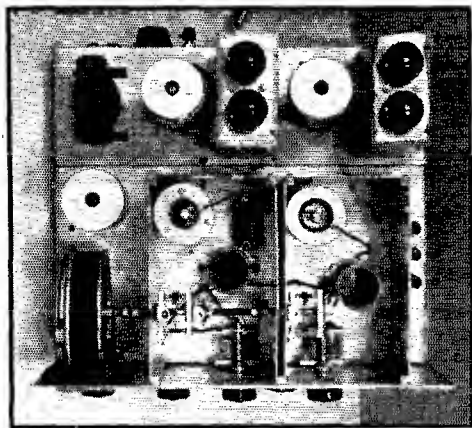
THOSE who have followed the articles¹ describing the development of the Single-Signal receiver will recall mention of several methods offering possibilities of providing the required high single-circuit selectivity, in addition to the quartz filter scheme used in the original receiver. One of these was the use of regeneration. In fact, a regenerative i.f. stage was given passing attention in the preliminary experiments but, as was related in the August, 1932, article, "Trial of this brought discouragement in the form of instability. It would give noticeable selectivity

possible receiver that would give something like the grade of performance established by the original S.S. model. Without further preliminaries, it can be said that this has been accomplished.

SELECTIVITY WITH REGENERATION

Long experience with regeneration in detectors has served to familiarize us with its ability to give great gain or sensitivity and, to a lesser extent, with its value in providing selectivity. As has been stressed in several recent articles,² the selective properties or regenerative circuits have been utilized but little in our operation of detectors. This has been particularly so in c.w. reception. The detectors have been used as autodynes, oscillating to give the beat note and, hence, having the signal frequency off resonance with the tuned circuit. But now we are interested primarily in using regeneration to give high selectivity, with gain as a secondary consideration. Of course the two are almost identical in fact, because the apparent high selectivity (response to desired signal frequency, discrimination against all others), is just the result of extraordinary amplification at the regenerative circuit's resonant frequency and only ordinary amplification at other frequencies. The desired signal is boosted away up and the others are left as they would be for the same circuit without regeneration.

This is an essential that differentiates the selective property of the regenerative circuit from

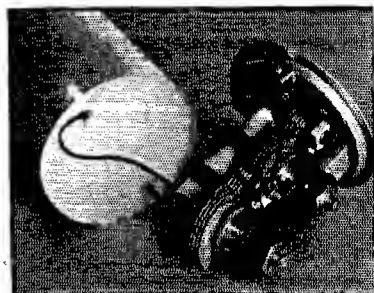


PLAN VIEW OF THE T.R.F. RECEIVER AFTER CONVERSION TO AN S.S. SUPERHET

The original mechanical arrangement is left intact and a 4 1/2-inch back porch added for the additional equipment. But one control knob is added on the panel. The left front compartment contains the h.f. oscillator, the right the first detector. The regenerative r.f. stage is rear right, the beat oscillator rear left. The tube behind the drum dial is the pentode second detector.

as between weak or moderate signals but immediately broadened out and became ineffectual on strong signals, where it was most needed. It was also tricky in adjustment and spilled over into oscillation on the slightest provocation."

True enough, the regenerative amplifier did give little encouragement in those first trials. However, the idea held promise in spite of its discouraging features. We recognized it to be basically sound. The problem was to iron out the "bugs," get a rationally operating circuit arrangement and put the thing to work in a simple-as-



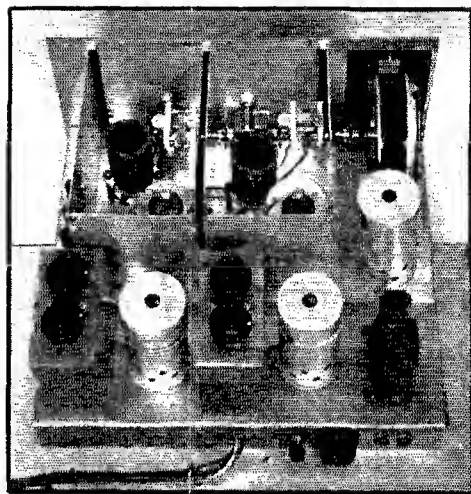
ONE TYPE OF AIR-CONDENSER TUNED I.F. TRANSFORMER

The coil assembly is vertical, to fit in a standard National 3-inch round can. A special feature is the friction arrangement to provide self-locking of the National tuning condensers.

¹ Refer to April, June, August, September, November, 1932 and March, 1933, issues of *QST*.

² Particularly, "What's Wrong With Our C.W. Receivers?", June, 1932; and Robinson, "Regenerative Detectors," February, 1933, issues of *QST*.

that of a filter such as the quartz crystal. The electric filter passes the desired signal frequency, with relatively slight loss, and other frequencies with as great attenuation as possible. It's the contrast between one thing being high because it is raised up above its surroundings; and another thing being high because its surroundings are pushed down below it. An even more important essential difference between the two types is that the regenerative circuit is active or dynamic in nature, whereas the electric filter that possesses selectivity by virtue of its inherent properties of capacitance, inductance and resistance, is passive or static in nature. Contrasting the two types specifically, the regenerative circuit gives high selectivity because the resistance normal to the tuned grid circuit is cancelled by the negative resistance dynamically provided by tube operation; while the quartz filter gives selectivity by virtue of its extraordinary inductance. Since the measure of circuit selectivity is the ratio of inductance to resistance (frequency being equal), it is evident that selectivity can be improved either by lowering the resistance or by increasing the inductance. As it works out, the negative resistance obtained by regeneration can give an order of selectivity with coils and con-



PLAN VIEW FROM THE REAR

The beat-oscillator tank knob, switch and 'phone tip jacks are at the right.

However, by its very dependence on dynamic characteristics for selectivity, the regenerative circuit has limitations that the quartz filter does not have. Selectivity with regeneration may be as high as that with the quartz filter for frequencies very near resonance. But, since the negative resistance that does the business really serves only to peak the curve right at resonance, the response for frequencies a percent or so from resonance will be no better than the non-regenerative selectivity of the tuned circuit. In practical operation the most noticeable indication of this difference has been found to be in background noise. For the same sensitivity, the S.S. receiver with the quartz filter cuts noise considerably more than does the receiver using the regenerative r.f. stage. But in separating signals within a kilocycle or so of each other and in eliminating the audio-frequency image (which is the essential earmark of single-signal reception) both types are on a nearly equal basis, although the peculiarly non-symmetrical selectivity characteristic of the quartz filter gives it a slight advantage in this respect also. But it's eliminating immediately neighboring QRM that's the main problem and we can't expect everything from five tubes and a few circuit tricks.

SETTING UP THE CIRCUIT -

Although it may seem almost heretical to associate regeneration with anything but a detector circuit, the present application ditches detector regeneration completely and promotes the feed-back feature to a preceding r.f. stage.

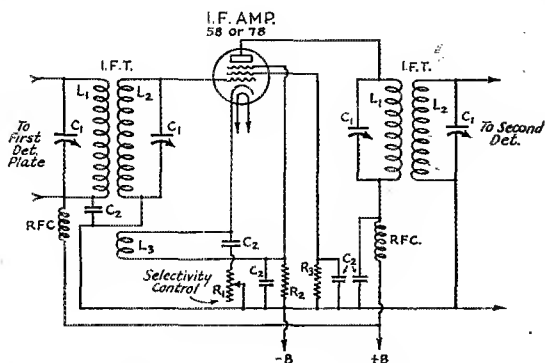


FIG. 1—THE SCHEMATIC ARRANGEMENT OF THE REGENERATIVE I.F. STAGE USED TO OBTAIN HIGH SELECTIVITY

The tuned coupling transformers are orthodox except for the feed-back coil L_3 of the input. R_1 is the regeneration control, a 2000-ohm (or so) variable resistor serving as an r.f. attenuator. The blocking condenser in series prevents this resistor from shorting the 300- to 400-ohm cathode resistor R_2 . The circuit will be recognized as similar to that of a regenerative detector with tickler in the cathode circuit, and is similar to that of the electron coupled oscillator. It should never oscillate, however. R_3 is the usual screen voltage dropping resistor of 50,000 ohms or so and condensers C_3 are r.f. by-passes of 0.005- μ fd. or larger.

condensers approximating that given at the same frequency by the quartz crystal which has an inductance that is impossible in a coil-condenser combination.³

³ For quantitative data, see Colebrook, "High-Selectivity Tone-Corrected Receiving Circuits," *Radio Research Special Report No. 12*. (Also referred to on page 35, March, 1933, *QST*.)

There are several sound reasons for doing this. The first is that we want the regenerative stage to operate in linear fashion. We want it biased to the middle of its curve, so that its characteristics will be as constant as we can get them. A detector can't operate that way and still be a detector. The second reason for going to the r.f. stage is that we want to place the regenerative circuit near the front end, where the signal voltage will be small. When its grid gets a signal large enough to run it positive the selectivity is wrecked and the circuit is likely to break into oscillation. If there were two i.f. stages, the regenerative circuit would be the first one. There will be only one, however, because the one gives plenty of gain — and controllable regeneration with more than

one high-gain stage . . . !! Still another reason for passing up the detector in favor of the r.f. amplifier as the place to put the regeneration is that, for the same gain, there is likely to be less noise with the regeneration in the strictly r.f. circuit. It is probable that noise accompanying regenerative detection is aggravated by audio modulation in the plate circuit of the r.f. fed back to the grid circuit. With negligible audio-frequency impedance in the r.f. amplifier's plate circuit, the noise should be considerably reduced. Experiment verifies this expectation.

One practicable type of regenerative i.f. amplifier circuit that has been worked out is shown schematically in Fig. 1. Essentially it is an orthodox tuned r.f. stage — with the exception of the

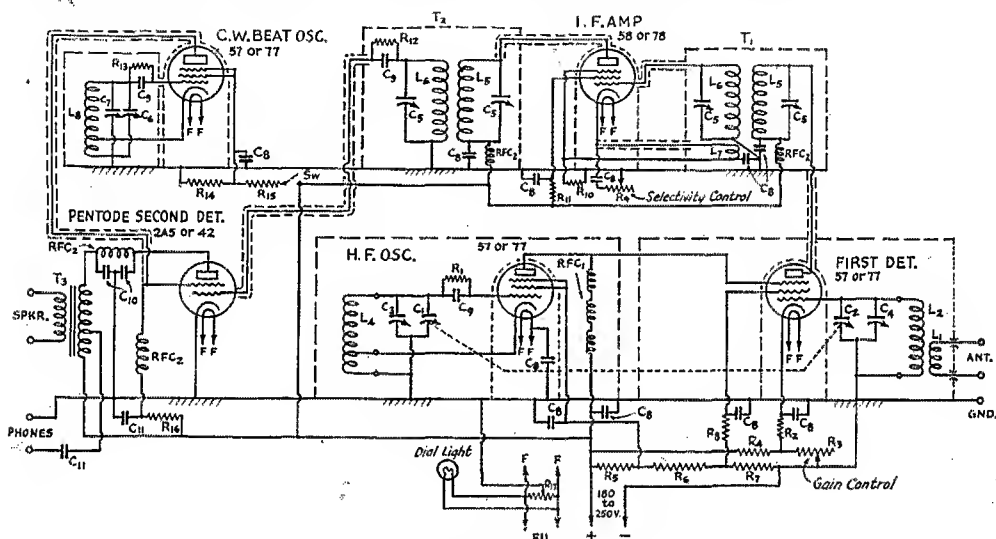


FIG. 2 — COMPLETE CIRCUIT OF THE CONVERTED RECEIVER

Most of the components in the high-frequency end are identically the same as described in George Grammer's article in January, 1933, QST, which should be read before starting construction of the complete job.

L_1 and L_2 — Antenna and grid coils of first detector, unchanged.

L_3 — Not used. Leave disconnected from circuit.

L_4 — Unchanged except that cathode tap is placed $\frac{1}{4}$ to $\frac{3}{4}$ of total turns from ground end. (Not critical.)

L_5 and L_6 — See text.

L_7 — See text.

L_8 — Beat oscillator inductor. 140 turns of No. 30 d.s.c. or equivalent on $1\frac{1}{2}$ -inch diameter form. Length of winding $1\frac{1}{2}$ in. Tapped 30 turns from ground end.

C_1 and C_2 — Ganged tuning condensers, 35- μ fd. midgets. (Unchanged.)

C_3 , C_4 — Tank padding condensers, 100- μ fd. midgets. (Unchanged.)

C_5 — I.f. tuning condensers, 100- μ fd. midgets.

C_6 — Beat oscillator tuning condenser, 20- or 25- μ fd. midget.

C_7 — Beat oscillator tank padding condenser, 200- μ fd. midget variable or 100- μ fd. midget in parallel with 100- μ fd. fixed mica.

C_8 — Non-inductive r.f. by-pass condensers, 0.005- μ fd. or larger (paper or mica).

C_9 — 250- μ fd. mica grid condenser.

C_{10} — 250- μ fd. plate by-pass condensers.

C_{11} — 1- μ fd. audio by-pass and coupling condensers.

R_1 — 50,000-ohm 1-watt oscillator grid leak.

R_2 — First detector cathode resistor, 5000-ohm 1-watt.

R_3 — 2000-ohm variable resistor, "left-hand" taper preferred.

R_4 — 100,000-ohm 1-watt.

R_5 — 10,000-ohm 1-watt.

R_6 — 7000-ohm 1-watt.

R_7 — 3000-ohm 1-watt.

R_8 — 50,000-ohm 1-watt.

R_9 — 2000-ohm variable resistor, preferably non-inductive type with "left-hand" taper.

R_{10} — I.f. amplifier cathode resistor, 300-ohm 1-watt.

R_{11} — 50,000-ohm 1-watt.

R_{12} — Detector grid leak, 1-megohm $\frac{1}{2}$ -watt.

R_{13} — Beat osc. leak, 50,000-ohm 1-watt.

R_{14} — 2500-ohm 1-watt.

R_{15} — 10,000-ohm 1-watt.

R_{16} — 25,000-ohm 1-watt.

R_{17} — 20-ohm center-tap resistor for 2.5-volt tubes, 100-ohm for 6-volt tubes. Omitted with d.c. filament supply.

T_1 and T_2 — 465- or 525-kc. i.f. transformers. See text.

T_3 — Audio output transformer. See text.

RFC_1 — Sectionalized type short-wave choke, 3-to 8-millihenry.

One with universal-wound sections preferred. (National No. 100 or equivalent.)

RFC_2 — 40- to 60-millihenry broadcast-band type r.f. chokes. Single-section universal-wound type satisfactory.

Dash lines indicate shielding. Shading indicates chassis. "Ground" points are bonded with copper wire, in addition to connection through chassis.

regenerative feature. This is provided by the tickler L_3 in the cathode circuit, coupled to the grid coil of the input transformer. Regeneration, and hence selectivity, is controlled over the working range by the variable resistor R_1 , connected across the tickler through the blocking condenser C_3 . This control operates as a variable r.f. short across the tickler, thus controlling feed-back to the grid circuit. The blocking condenser in series with the resistor is necessary to prevent shorting the normal cathode resistor R_2 .

Since circuit elements other than the intended regeneration control also affect the regeneration, it is absolutely essential that they be stable. This applies especially to the tuned circuits. Therefore, the tuning condensers should be of the air-dielectric (midget) type, in preference to the less stable mica type commonly used in i.f. transformers. Transformers using air-condenser tuning are not difficult to make up, as the illustrations demonstrate, and need not be excessively bulky. The ones shown were "hand made," but commercially manufactured models of corresponding characteristics are now available. Home-made versions can use the same primary and secondary coils as the mica-tuned type transformers, of course, with the assembly arranged to fit the shield cans obtainable.

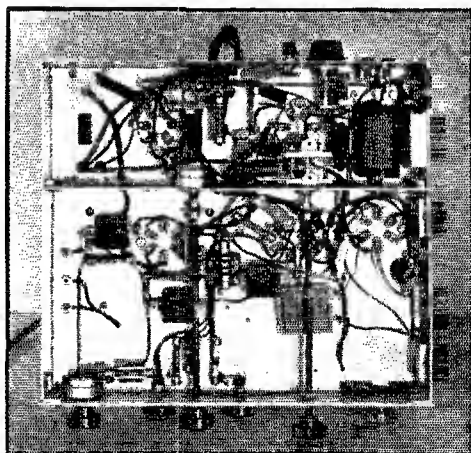
A COMPLETE RECEIVER

As was the original S.S. model, and for the same reasons, the simplified version is also a superhet. The high selectivity amplifier is practicable only when it can work at a reasonably low radio frequency of fixed value, which means that it must be the i.f. amplifier of a superhet. And in this superhet era, who would have it otherwise? Several models of the present receiver have been built up, one being an elaboration of the s.w. converter described in the new *Handbook* (tenth edition) and another using as a foundation George Grammer's "rationalized" autodyne, which was described in January, 1933, *QST*. The latter will be used as the constructional example for this article because it demonstrates how a typical t.r.f. regenerative receiver can be remodeled into a cracking good superhet, thereby making the dope of the greatest value to the greatest number. With due allowance for differences in the high-frequency tuning systems, the same medicine is fully applicable to any regenerative receiver of the type, such as Ross Hull's "unorthodox," the National SW3, etc.

Surveying the schematic of Fig. 2, unconventionally laid out right-to-left to correspond with the actual arrangement of the receiver, we see that the tuned r.f. stage has become the first detector, that the regenerative detector has become the h.f. oscillator and that the audio amplifier has been replaced by the power-type second detector. The only real additions are the i.f. and

c.w. beat oscillator components mounted on the chassis extension at the rear.

Running through the circuit, we find that the original tuning system is used for the first detector and h.f. oscillator. Even the same coils are used, the only change in them being the moving of the cathode tap on those of the oscillator. The gain control is still in the cathode circuit of the first tube — and the original 10,000-ohm variable resistor could be used although the smaller one



THE UNDERSIDE OF THE CHASSIS

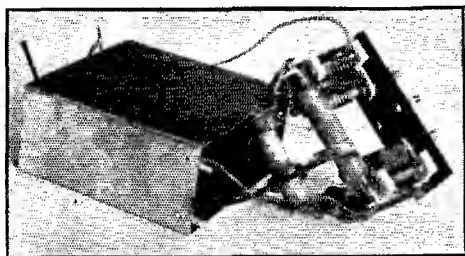
Wiring and components are placed as convenient. A hole underneath the first i.f. transformer gives convenient access for adjusting the tickler position. The regeneration control resistor (near center) and beat-note control condenser are in the rear compartment, with 1/4-inch bakelite shaft extensions to the panel knobs.

specified gives somewhat smoother control. The oscillator grid leak is of lower resistance than that used for detection, of course, and somewhat different resistor values are used in the supply circuits. The oscillator coil winding formerly used as the primary, L_3 , is not used but need not be removed.

In this particular arrangement there is no r.f. stage ahead of the first detector to give pre-selection, which means that there must be greater liability to radio-frequency image interference. But it will be no worse than with other receivers that have no t.r.f. stage at the front end. The addition of such a pre-selector would be worth while, as a subsequent refinement, the circuit being simply that of a t.r.f. stage with coil and condenser identical with that of the present first stage. The first detector coil should have added to it a primary winding — just like the now unused one on the oscillator coil.

The method of coupling the oscillator to the first detector differs from the usual and deserves a little explanation. As shown, the plate of the electron-coupled oscillator is tied to the suppressor grid of the first detector. Both are shunt

fed from the positive "B" through the h.f. choke. In contrast to the usual method of coupling the oscillator to the detector control grid, this method prevents oscillator output from escaping to the antenna, since the suppressor of the detector is shielded from the control-grid circuit. This is an improvement over grid-circuit coupling in that it prevents "blooming" interference to others and also eliminates the possible "dead spots" in the tuning that occur when the oscillator frequency



THE TYPE OF AIR-CONDENSER TUNED I.F. TRANSFORMER USED IN THE RECEIVER

The can is soldered copper, 4 by 4 by 2 inches. The assembly is supported from a bakelite strip that bolts to the top of the can. Pieces of $\frac{1}{16}$ -inch fiber screwed to the condenser frames are bent to support the coil form (wood dowel) and also carry the plate-feed choke, grid resistor, etc. A double-section .01- μ fd. tubular by-pass serves for both plate and grid return circuits in this version. The tuning condensers are 100- μ fd. Hammarlund midgets.

happens to hit resonance with the fundamental or a harmonic of the antenna. Another improvement is that the selectivity of the input circuit is likely to be better than with grid coupling, and first detector hiss is likely to be less because there isn't the liability of the local oscillator signal overloading the detector grid.

It also should be noted that the suppressor of the pentode-type oscillator tube is tied to its screen grid, a minor diversion that has been found a useful convenience. As indicated, either Type 57 or the new Type 77 tubes can be used, the 57's for 2.5-volt a.c. filament supply and the 77's for 6-volt d.c. or a.c. supply. For maximum sensitivity a 57 or 77 is preferable to a 58 or 78 in the first detector. With the "50" series tubes, the electron-coupled oscillator tube can be either a 57 or 58, but a 77 is preferable to a 78 if 6-volt tubes are to be used because the 77 has the internal cage shield connected to its screen grid (desirable) while the 78 has it tied to the cathode (not so good).

Although the tracking of oscillator and first-detector tuning is satisfactory with the coils "as is" in the shunt-condenser tuning system of this receiver, single-control receivers using other tuning systems may require slight modification of the oscillator coils. In the case of the tapped-coil tuning arrangement (as used in the National SW3) it will be necessary to tailor the oscillator coils by moving the tuning condenser tap towards the ground end and perhaps by removing a turn

or so from the top as well. This will require cut-and-try. No specific instructions can be given. The oscillator circuit with coils having a tickler winding can be like that shown in Fig. 2 (C), page 15, April, 1932, *QST*; or the grid coil can be tapped about one-third of its total turns from the ground end and the tickler left idle.

THE I.F. CIRCUIT

Except for the regenerative feature at the input, there is nothing especially unusual about the i.f. circuit. The input transformer T_1 contains the usual primary and secondary windings, L_5 and L_6 , spaced approximately $1\frac{1}{8}$ -inch between centers, with the small tickler winding, L_7 , coupled to the grid coil, about $\frac{1}{2}$ to 1 inch to the outside of the grid coil. For intermediate frequencies of between 465 and 550 kc., the two identical universal-wound coils L_5 and L_6 should have inductance of between 1 and 1.3 millihenries. The ones used in the transformers shown are of 1 millihenry and the i.f. intended is 525 kc. The size of the tickler will depend on the inductance of the secondary to some extent, being of the order of 25 microhenries. If a small universal-wound coil of this size is not available, the tickler may be made up of about 25 turns of No. 30 d.s.c. or equivalent, bunch-wound to slip over the form on which the other coils go. In determining the right size of tickler and its approximately correct spacing from the secondary, the transformer can be temporarily connected up (unshielded) in a circuit like that of Fig. 1, with the regeneration control omitted. Then the tickler can be juggled until an adjustment is obtained where the tube just begins to oscillate, oscillation occurring at the drop in current indicated by a milliammeter connected in the positive screen-voltage lead. It should be remembered that the tickler must be poled so that feed-back will be in the right phase. If this cannot be determined by inspecting the coils, then the tickler connections may have to be reversed. With universal-wound coils, the inside lead of the secondary should go to the grid and the corresponding lead of the tickler to the cathode.

After these preliminaries, the assembled transformer should be given a final tickler adjustment in the receiver circuit. This is done easily through a hole in the base-plate, immediately under the tickler coil. Further details of tickler adjustment will be given with the later instructions. Needless to say, the "hot" r.f. leads as well as the tuned circuits and tubes of this stage, and those of the other i.f. components, should be thoroughly shielded. The necessary shielding is indicated by the dash-line enclosures on the diagram.

The second i.f. transformer is "straight" and is identical with the first except that it has no tickler winding. It, like the first, should have the plate by-pass and r.f. choke inside the shield can.

(Continued on page 58)

Rotten Signals : How to Cure Them

A Talk About the Essentials of Transmitter Tuning

By George Grammer, Assistant Technical Editor

FULLY half the letters intended for *QST*'s Correspondence Department recently have dealt vehemently with rotten notes, especially of the 40- and 20-meter variety. In almost every case a self-excited transmitter is responsible — probably in most cases a transmitter using something bigger than a 210. Now a raspy r.a.c. note may be all right for the fellow behind the key; he doesn't have to listen to it. But it's all wrong for the other 90% who take some pride in putting out a clean signal; theirs are the ears that suffer. When the day comes that we all have single-signal receivers the rotten note problem will cease to exist — that type of

the old rules had lost their effectiveness. As a matter of curiosity we built a typical self-excited transmitter, using a tube which by all indications ought to be one of the least satisfactory at high frequencies, and rediscovered, with much satisfaction, that the old precepts were quite up to snuff. Evidently the answer is that they're not being applied.

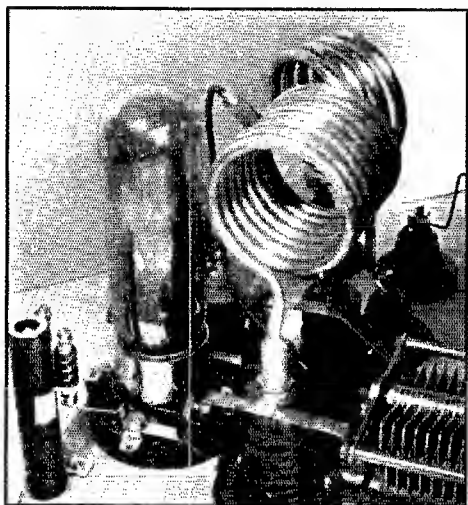
WHAT'S IN A TRANSMITTER?

A self-excited transmitter has four divisions: an oscillator tube and circuit; a power supply, an antenna system and a *monitor*. Some people have tried to get along with only the first three with results which are evident. The fourth is just as essential to a good transmitter as any of the others. It doesn't matter much what kind of monitor it is — it may simply be the station receiver if the latter is well enough shielded — so long as the oscillator in it is steady and capable of giving a beat with the transmitter. Therefore the first recommendation is: *Get a monitor*. Obviously, it's impossible to tell whether a change has made any improvement if there is no way of listening to the transmitter.

CIRCUITS

In performance, the different circuits — Hartley, tuned-plate tuned-grid, and so on — are practically identical. Whether or not the results are good is entirely a matter of how the circuit is handled. There are only two objects in the adjustments one makes to a transmitter — power output and frequency stability. The last is just as important as the first.

Frequency stability is not a matter of a single adjustment or a single feature in the transmitter. There are at least four ways in which instability can get into a transmitter. The first is through changes in frequency caused by changes in plate voltage, or *dynamic* instability. If we plot a curve of oscillator frequency against changes in plate voltage it will be found that as the voltage is increased from zero there will be a continuous frequency change until the final voltage is reached. The extent of this change is a measure of the dynamic instability of the transmitter. On a small transmitter with but 500 volts on the plate the change in frequency can be 20 kilocycles or more at 7000 kc. if the set is poorly designed and incorrectly operated. Naturally it will be worse if the plate supply is 1000 volts or more. With a poorly-filtered plate supply the



TANK CIRCUIT LEADS SHOULD BE SHORT

To keep down the losses. The leads here are half-inch wide soft copper strip and go directly from the condenser to the G.R. standoffs into which the coils fit. The ends of the coils are sweated into the new G.R. transmitting plugs. The same copper strip is used to connect the tank circuit to the tube socket through the grid and plate blocking condensers. The grid leak is mounted vertically on a corner of the baseboard, with the grid choke going directly from the upper end of the leak to the grid terminals on the socket. This view shows the 7-mc. coil in place.

signal is unreadable on a really selective receiver and loses most of its power to cause QRM. But right now the "mud-like r.a.c." is on the increase.

The principles of correct transmitter adjustment were established long years back. After doing some listening to things flying around in the ether these days we began to wonder whether

note from such a transmitter is going to be r.a.c. hash, because the frequency will be flitting gaily back and forth at the plate-supply ripple frequency.

The remedy for dynamic instability is to be found in the use of a large ratio of capacity to inductance in the oscillator circuit, and particularly in the plate tank circuit if the grid and plate are separately tuned. In other words, High C . This does not necessarily mean an inordinately large tuning condenser. We know that few hams operating 203-A's and 852's have high-voltage variable condensers with a maximum capacity of 500 μfd . But nearly all of them have 220- or 250- μfd . condensers, and those condensers are big enough *provided the coils are cut so that the band is hit with the condenser plates practically all the way in*. Paring down the coil is the first step toward eliminating dynamic instability.

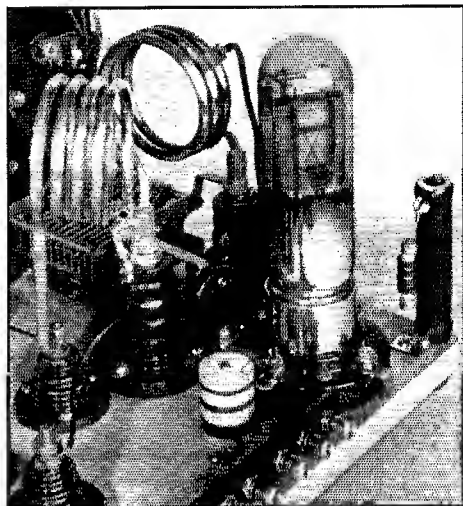
OTHER CONSIDERATIONS

Once the coil has been cut down so that about 200 μfd . can be used to tune it, attention should be given to the excitation and the grid leak. Both — and they are not independent of each other — have far more to do with the final condition of the note than most amateurs realize. If the tube is to work at reasonable efficiency it must have high bias, which in turn calls for a high-resistance leak and plenty of excitation. The dynamic stability is improved under the same conditions. The excitation *must* be adjusted with a load on the oscillator. The setting which gives the least plate current when the oscillator is not delivering power to an external circuit is invariably the wrong one; the excitation will be insufficient under these conditions and the stability will suffer. As a general rule, the no-load plate current should be at least half the load plate current, although this depends somewhat on the frequency. The excitation is increased in the Hartley circuit by moving the filament tap nearer the plate end; in the t.p.t.g. by increasing the capacity of the grid tuning condenser. Since the adjustment is critical it is best to make changes in very small steps, watching the input and output and *listening in the monitor*. Listen especially to the character of the signal when it is keyed. If the circuit is High- C a key chirp is an almost certain indication of insufficient excitation, with the exceptions noted later on. Use the highest value of grid leak resistance that will permit the tube to oscillate stably with normal input — between 10,000 and 20,000 ohms for a single tube, usually. Too much leak is just as undesirable as too little. And remember that the higher the leak resistance the greater is the excitation voltage required, so every time the leak resistance is changed there must be a corresponding change in the excitation tap or condenser setting.

EFFICIENCY

A high C -to- L ratio brings with it large circulating currents in the tank circuit, hence the tuned circuit leads should be short and of heavy conductor. If the oscillator coils are plug-in, it is also necessary to be sure that the joints make good contact and have low resistance. Coils may be bolted in place or heavy plugs and jacks, lately made available for transmitting coils, may be used.

It is necessary at this point to make a distinction between tube efficiency and circuit efficiency. If the tube is running normal plate current under load and is correctly biased and excited, its efficiency will be as high as in any other circuit regardless of the L - C ratio. The circuit efficiency will be somewhat lower in a High- C circuit, however, because of the greater losses caused by the higher tank current. The distinction is important because it is necessary for the tube itself to operate at high efficiency if it is to stay cool in operation. And it is highly desirable for



A VIEW FROM THE OTHER SIDE

Showing the plate choke and the 14-mc. tank coil. The dynamic stability of this oscillator is such that between plate voltages of 100 and 1000 the change in frequency is less than 1 kilocycle, at 7100 kc., with the transmitter fully loaded. With a similar change in plate voltage at 14 mc. the frequency change is slightly over 1 kc. With an unfiltered plate supply the note is musical r.a.c. and sharp. On 7 mc. the plate current is about 75 ma. unloaded; 150 ma. with load. On 14 mc. the no-load plate current with correct excitation is 120 ma.; fully loaded, 180 to 190 ma.

the heat dissipation in the tube to be well within the ratings because heat makes the tube elements expand, which in turn causes the interelectrode capacities to change. Since the interelectrode capacities are unavoidably a part of the circuit, there results the second cause of instability — a slow frequency change or "drift." The greater the condenser capacity in the tuned circuit, the

less will changes in tube capacity affect the frequency. Therefore the same things which give good dynamic stability will also minimize frequency drift — High C , a high-resistance grid leak, and correct excitation. In addition, *the tube must not be overloaded*. The plate should never show signs of color even when the tube is allowed to oscillate continuously for minutes or even hours at a time.

Frequency drift also can be caused by heating of the tank coil and condenser, another reason why the resistance in the tuned circuit must be low. Drift from this cause will be less when power is being taken from the circuit because the tank current decreases with increasing load.

MECHANICAL INSTABILITY

When the electrical features have been taken into account there remains the third cause of poor notes — lack of attention to mechanical details. Cleaning up dynamic instability and drifting are not in themselves the guarantee of a good note. It is when these things have been done that the smaller — but nevertheless just as

separate table, jack it up with sponge rubber, hang it with shock-proof cord, anything you like — *but protect it from vibration*.

It should be unnecessary to mention that the oscillator itself should be solidly constructed. Short, heavy leads, parts fastened securely so they cannot shake; in fact, every care that can be taken to prevent floppiness is worth while. Furthermore, it's not hard to do and costs nothing.

One excellent way to turn a d.c. note into r.a.c. is to build the oscillator and power supply as one unit. Even the quietest of filter chokes and transformers will vibrate, and when the whole works is rigidly mounted on one frame or baseboard, the vibration is transmitted very efficiently to the oscillator tube and the tuned circuit. The power supply should be put off by itself, mounted on some sponge rubber or felt if necessary. If it is impossible to get a pure d.c. note with a power supply which by all the rules has adequate filtering, the chances are excellent that vibration is responsible.

ANTENNA AND FEEDERS

After all these things have been corrected there is still the fourth possible cause of instability — frequency warbles caused by a swinging antenna or feeders. As soon as the oscillator is coupled to an antenna or feeder system and power is taken out, the antenna or feeders become a part of the tuned circuit. A Hertz antenna suspended well in the clear can swing a great deal before there is much effect on the frequency, but the feeders are another story altogether. Zepp feeders especially are likely to be bad offenders, because the wires are relatively close together and hence have fairly large capacity to each other, so that if they swing back and forth the oscillator frequency may change considerably. For this reason the feeder wires should be spaced at least ten or twelve inches and should be liberally supplied with *light-weight* spacers. With light spacers the whole feeder system tends to swing as a unit in a wind, but heavy spacers, because of their greater inertia, cause the wires to whip back and forth. The antenna and feeders should be pulled up tight, of course.

Some capacity coupling always exists between the oscillator coil and the antenna coupling coil, especially when the coupling is tight. This capacity coupling is no value in transferring power to the output circuit, but does help along the harmonic output and makes the oscillator particularly susceptible to capacity changes in swinging feeders. Therefore it is advisable to couple to the "cold" end of the tank because the r.f. voltage is low and little energy is transferred through capacity coupling. The antenna will take power just as readily as when the coupling is to the plate end.

(Continued on page 56)

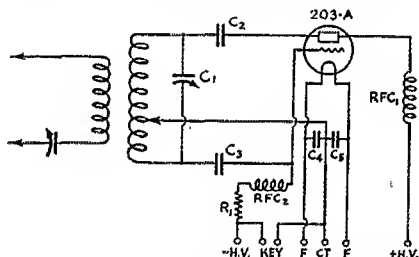


FIG. 1. — THE HARTLEY CIRCUIT USED IN THE TRANSMITTER SHOWN IN PHOTOGRAPHS

- C_1 — 220- μ fd. transmitting condenser.
- C_2 — 500- μ fd., 5000-volt mica condenser.
- C_3 — 250- μ fd. mica condenser.
- C_4, C_5 — .005- μ fd. mica condensers.
- R_1 — 10,000-ohms, 50-watt rating.
- RFC_1 — Plate choke, similar to G. R. Type 379-T. Has three $\frac{1}{4}$ -inch-deep slots, spaced $\frac{1}{4}$ -inch apart on 1- $\frac{1}{2}$ -inch wood spool. First slot $\frac{1}{2}$ -inch wide, second $\frac{3}{16}$ inch wide, third $\frac{5}{16}$ inch wide. All wound full of No. 34 d.s.c. wire.
- RFC_2 — May be same as RFC_1 . Actually used National Type 100.

The tank coils are $\frac{3}{4}$ -inch copper tubing, inside diameter of coils $2\frac{1}{2}$ inches. Three turns for 14 mc.; 8 turns for 7 mc. Antenna coupling coil and tuning condensers as usual for type of antenna or feeder system used.

serious — causes of instability become apparent. Mechanical vibration of coils, tube elements and condenser plates can utterly wreck an otherwise pure d.c. signal. It's no job at all to pick out "mushy d.c. signals" on the air, which, when the key is held down for more than a few seconds, change into good d.c. And all because the key is mounted right alongside the transmitter on the operating table and the whole transmitter does a shimmy whenever a little brasspounding is in order. Self-excited transmitters should never be placed where they pick up every vibration set up by the operator's movements. Put the set on a

Tubes of the Month

The 77, 78, 75 and 53

WHEN the 57 and 58 were announced we rather suspected that it would be simply a matter of time before corresponding types would be made available in the 6.3-volt series. Now we have them in the 77 and 78 — r.f. pentodes with the suppressor grid brought out to a separate pin on the base. The electrical characteristics of both types are sufficiently close to those of the corresponding 2.5-volt types to make the new tubes interchangeable with the old, except for filament voltage, in ham receivers. There are a few physical differences, however. It will be remembered that in the 57 and 58 there is no screen around the outside of the plate, and that because of this a special type of tube shield became necessary. The idea behind this was to cut down the output capacitance of the tube to make it better at high frequencies. Apparently this feature has not proved sufficiently valuable to be retained in the 77 and 78, because both these types have shields outside the plate in the familiar style of the 24 and 35.

THE 77

The 77 is a sharp cut-off tube suitable for use as an r.f. amplifier, detector and oscillator, and may be used with either a.c. or d.c. heater supply. It resembles the 57 in external appearance, having the same size and shape of bulb, a small 6-prong base and a grid cap on top. The pin connections are the same as those of the 57 (see March *QST*, page 30). The characteristics follow:

Heater voltage	6.3 volts
Heater current	0.3 amp.
Plate voltage	250 volts
Screen voltage	100 volts
Grid voltage	-3 volts
Plate current	2.25 ma.
Screen current	1 ma. max.
Amplification factor	1500
Plate resistance	1.5 megohms
Mutual conductance	1250 micromhos

In the 77 the shield outside the plate is connected to the screen grid — a desirable feature when the tube is used as an electron-coupled oscillator. For such use the suppressor grid should be connected to the screen grid.

THE 78

The 78 is a variable- μ tube and as such is especially valuable as an r.f. amplifier. In this tube the shield outside the plate is connected to the cathode — note the difference between the 78 and the 77 in this respect — and therefore is not as desirable as the 77 as an electron-coupled oscillator because the effect of the shielding is partially destroyed when the cathode is "above

ground." The characteristics of the 78 are as follows:

Heater voltage		6.3 volts
Heater current		0.3 amp.
Plate voltage	250	180 volts
Screen voltage	125	75 volts
Grid voltage	-3	-3 volts
Plate current	10	4 ma.
Plate resistance	.65	.8
Mutual conductance	1650	1450
Grid voltage for plate current cut-off	-50	-42.5
		-35 volts

The 78 has the same bulb and base as the 58. Pin connections also are the same.

THE 75

The 75 is a high- μ variety of the 85. It is a duplex-diode triode belonging to the 6.3-volt family and may be operated on either a.c. or d.c. heater supply. Physical appearance and pin connections are the same as the 85. The characteristics of the triode portion as a Class A amplifier are:

Heater voltage	6.3 volts
Heater current	0.3 amp.
Plate voltage	250 volts
Grid voltage	-2 volts
Plate current	1.2 ma.
Amplification factor	100
Plate resistance	90,000 ohms
Mutual conductance	1100 micromhos

The 75 may be used for any of the applications to which the 55 and 85 are adapted. The triode portion is designed primarily for resistance-coupled amplification. When used for this purpose the coupling resistor may be of any value up to 500,000 ohms.

THE 53

The 53 is a twin Class B tube of the 2.5-volt series, having an indirectly heated cathode. It has a medium dome-top bulb and a medium 7-pin base. Using the notation given in March *QST*, the pin connections are as follows: No. 1, grid No. 1; No. 2, plate No. 1; Nos. 3 and 4, heater; No. 5, plate No. 2; No. 6, grid No. 2; No. 7, cathode.

The characteristics of the 53 are as follows:

Heater voltage	2.5 volts
Heater current	2.0 amp.
Plate voltage	300 volts
Grid voltage	0 volts
Plate current, zero signal	12 ma.
Plate current, full signal	70 ma.
Optimum load resistance	10,000 ohms
Power output	10 watts

No information is available as to the driving power required.

We are indebted to Everready-Raytheon for the information on the four types described above.

— G. G.

A Modulation Monitor for 'Phone Transmitters

By James J. Lamb, Technical Editor

THE increasing improvement in selectivity of our receivers is revealing that all is not according to Heising in the modulation of ham 'phones. Time was when modulation that sounded better than average was classified as "just like a broadcast station," and everything that was broad was thought to be a product of frequency modulation. Receivers are more critical of quality in these days, however, and frequency modulation is a rare exception. Selective receivers, especially those of the s.s. variety, are showing that most of the broadness isn't the fault of frequency modulation and that even perfectly stable crystal-controlled outfits are taking up a lot more than the 6 kc. or so they ought to occupy. There's another monkey-wrench in the junk box besides frequency modulation. And we don't have to dig very deep to find out what it is.

Lopsided modulation, the same animal as the carrier shift pictured right at the beginning of the 'phone chapter in *The Radio Amateur's Handbook*, is the explanation. It is purely the result of improper operation of the transmitter and causes the generation of a flock of spurious sidebands that spray out kilocycles and kilocycles beyond the frequency range a good 'phone signal should occupy. High receiver selectivity is no proof against these sidebands of course, because some of them splash into tune even when the unwanted carrier is away off resonance. This kind of modulation is largely responsible for the "burpy" interference that is caused by too many 'phones — over 50% of those that were recently checked on the 75-meter band, as a matter of fact. When in tune, 'phones badly afflicted with this carrier shift or overmodulation are identified by a peculiar kind of distortion that damages their quality, too. It's a grating harshness of a "stringy" character that shows up on the peaks. So the trouble isn't only one causing interference. It prevents a 'phone from having real quality, too — in spite of all the swell microphone and speech equipment there may be in the shack.

What actually happens in the transmitter is that the upward and downward swings in the modulation cycle are not equal. The upward swings may be greater than the downward, or the downward swings may be greater than the upward. Either way, the results are the same. As a consequence, the average amplitude of the modulated wave varies at change-in-modulation-level frequency, which isn't the same as modulation frequency but is much slower. This might be

looked at as simultaneous modulation at two different frequencies, one the voice frequency and the other the change-in-voice-intensity frequency, something like modulation of the modulation. This complicated process inevitably results in the generation of a whole flock of unwanted spurious sidebands, evidenced by damaging broadness and distortion.

Now the specification for proper modulation is that the average amplitude of the wave must remain unchanged. It should be the same with the carrier modulated as it is for the unmodulated carrier. Unfortunately, no meter ordinarily used

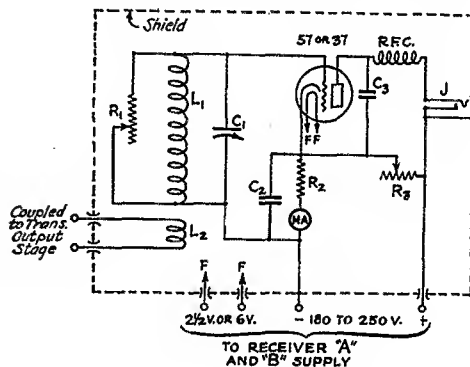


FIG. 1 — CIRCUIT DETAILS OF THE VISUAL MODULATION MONITOR

Carrier shift upward or downward is indicated directly by the meter.

L₁C₁ — Coil and midget condenser to tune to transmitter frequency.

L₂ — Coupling coil of 1 or 2 turns at ground end of L₁.

C₂ — 1-μfd. or larger, audio by-pass.

C₃ — Plate r.f. by-pass, 0.005-μfd. or larger.

R₁ — Variable resistor, 2000-ohm or so. May be left out for low-power transmitters.

R₂ — Cathode resistor, 100,000- or 150,000-ohm 1-watt.

R₃ — Bleeder to set minimum bias, 100,000- or 150,000-ohm variable resistor. May be omitted.

RFC — Short-wave type r.f. choke.

J — Single-circuit (closing) jack for 'phones.

MA — 0-1 d.c. milliammeter.

A Type 56 or 27 tube should be used for 2.5-volt a.c. filament supply, a 37 for 6-volt supply. The unit should be shielded as indicated.

in a transmitter will indicate directly whether or not this condition is being obtained. The antenna ammeter certainly will not do it. It shows effective current value, not average. It will kick up when the average is actually shifting down! A volume level indicator in the audio system is useless. The plate milliammeter of the modulated stage tries to show something, by kicking either upward or downward when it should remain

steady, but its indications are difficult to interpret. What we want is a simple gadget that will show us just what is happening to the carrier itself. We want a meter that interprets things directly in terms of average values. And we have it in the ordinary linear rectifier.

The most linear of so-called linear rectifiers that we know of is the self-biased type plate detector that has a resistor in the cathode circuit. It's the same type of rectifier as that used in the linear vacuum-tube voltmeter described by McLaughlin in May, 1932, *QST*. Look at the curves of that article and see how linear it is. The secret of its usefulness for our purpose is that the plate current is directly proportional to the average value of the a.c. (r.f.) input to the grid. In other words, as long as the average value of the input signal is constant, there is no change in plate current. If the average shifts upward, the plate current increases. If it shifts downward, the plate current also kicks downward. All we have to do is hook the thing up with a d.c. milliammeter of suitable range in the plate circuit and it becomes our modulation monitor. It is just the thing for listening monitor use, also.

The self-explanatory circuit of the one we have been using is shown in Fig. 1. It is essentially a one-tube receiver using a non-regenerative detector or, if you please, an r.f. vacuum-tube voltmeter. Take your choice. The resistor R_1 is not absolutely necessary but makes it possible to set the minimum bias so that nearly the full characteristic of the tube can be utilized. It is adjusted so that the tube draws almost zero current with no signal on the grid.

The best place for the monitor is right on the operating table, where it can be seen by the operator, and shielded leads may be used to connect a coupling turn at the transmitter's output circuit to the monitor input. The coupling at the transmitter end and the resistor R_1 are then adjusted so that the milliammeter reads about 4/10 ma., assuming a plate voltage of over 180. The circuit L_1C_1 should not be detuned from resonance.

After that it's just a matter of talk and watch the meter. When it shows a tendency to kick upward, overmodulation in that direction is taking place and the gain control simply should be backed off. But if it should kick downward, then something is seriously wrong with the transmitter adjustment and a check-up is called for. If the output stage is a modulated Class C one, it may be just a case of insufficient Class C stage excitation, overloaded modulator (excessive Class C stage plate current) or too much modulator bias. If there is a Class B linear stage, downward modulation may call for reduction of the excitation coupling to that stage — and so on, as per instructions in the *Handbook* and numerous *QST* articles that have dealt with 'phone transmitter adjustment.

Active 'phone men who are working for improvement in the conditions on the 'phone bands are urged to make use of this simple monitor and talk it up over the air. There's a lot to be done.

World's Fair—Chicago, 1933

THE World's Fair Radio Amateur Council, the body in charge of amateur radio activities at the World's Fair, announces that the calls W9USA and W9USB have been assigned to the stations to be located in the Administration Building on the Fair Grounds. There will be four transmitters in operation and two receiving positions (with latest s.s. receivers). A club room will be available for visiting amateurs. Historical displays of amateur equipment will be one of the features of the exhibit in the Travel and Transport Building. All in all the Radio Amateur Council will have charge of 2000 square feet of floor space. W9USA got on the air in early March. The Communications Committee of the Council has charge of all operating, and only the finest operators in the Chicago area will be on duty. Reports on the progress of the amateur radio arrangements at the Fair are being transmitted regularly by specially appointed amateur stations throughout the U. S. and Canada. A special QSL card of attractive design will be sent to every station worked. It is hoped that twenty-four-hour operation can be maintained and that schedules may be kept with at least one station in each state. Watch out for W9USA and W9USB — World's Fair — 1933.

Dakota Division Convention

April 21st-22nd, Oxford Ball Room, St. Paul, Minn.

Under the auspices of St. Paul Radio Club. For particulars write Rex L. Munger, 2484 University St., St. Paul, Minn.

Velocity Microphone Correction

The drawing of the d.c. field type velocity microphone, Fig. 2, page 24, February *QST*, has occasioned some confusion among constructors because the overall width and thickness dimensions of the pole pieces (1) were incorrectly shown. These dimensions should be doubled; i.e., the pole pieces should be one inch wide and $\frac{3}{8}$ -inch thick. This becomes apparent when the drawing is checked, because each pole piece must have a half-inch hole drilled in it to take the yoke (3), and because the ends of the yoke would project beyond the pole pieces if the latter are only 3/16-inch thick.

The Cruise of the "Northern Light"

KGEG's Globe-Girdling Trip

By William A. Crabbe, Ex-W6ESW*

"The fellows have urged me to write something of the trip that was made possible for me by a bulletin sent out by QST telling of the job. . . . The Northern Light is 150 tons, 139 feet long, and is an auxiliary schooner. She made her maiden voyage to Wrangell Island in 1927. . . . I used to go over the hill to Carmel and work PMZ, WSBS and some of those other expeditions from W6HM. It inspired me to make a trip."

So writes the author of this yarn.

— Editor

A TRIP around the world is a big thing to describe in a short article. Here are some of the incidents in regard to the radio. The romance and adventure of the tropical islands, foreign ports and different nationalities is left to your imagination.

It was the real active hams at home that kept busy doing the real work delivering messages by telegraph, mail and telephone. W6HM, VS1AB, W2CJR, W6UC, W6CZX, W6ACL and W6ATJ kept faithful skeds and did the work that only the amateurs can do.

When I had the opportunity of joining the *Northern Light* (and snapped at it) I was surprised to find no set aboard and the sailing date near. With little time to spare and expense cut to a minimum, a set was put together and we sailed on April 2, 1931, with a self-rectified 75-watt t.p.t.g. transmitter and a high-frequency receiver. A telegram arrived giving us the call letters KGEG. No one was worked until we were several days out.

The vibration of the engines and the grinding, crashing, buzzing sounds of various fans, generators, pumps, coolers and loose connections in the ship made enough noise to obscure the ordinary amateur station. Some of the noise was stopped, but still enough came through to cover any but the loudest signals. The d.c. SW-5 National set made it possible to use an antenna that picked up a minimum of noise.

After the first twenty days of such conditions, the *Northern Light* reached the Marquesas Islands. By that time, my ears must have become accustomed to the noise. At Nuka Hiva there was a severe quietude on the short waves, and while we were at anchor the signals pounded in from everywhere.

Most of us have our eyes open for antennas and radio towers when we are traveling. As I walked along the beach of Taio Hae Bay, I saw an antenna hanging down through the coconut trees to a tin roofed hut, and through the open doorway I saw a 75-watt short-wave set and a

gasoline engine power supply. A French operator met me, but since French isn't one of my accomplishments, and his English limited to "yes" and "no," we had to use "Q" signals for our conversation.

We also visited Hiva Oa in the same group of islands. The radio operator on that island had been electrocuted. We sent several important messages to FPE at Tahiti for the people on the island. From there we went to Manahi in the coral atolls. There were no white people on the island but the dusky inhabitants of this enchanting place offered us fruit and live chickens.

Finally we reached Papeete, Tahiti. We had traveled 3800 miles. George Bambridge (old OOBAM, now F3OCD), dressed in a pareu, showed me his equipment with which he keeps regular skeds with various islands and California. Amateurs who have met him know that he seems to own half of the island, including nearly all of the automobiles, several plantations, an import business and some ships.

We left Tahiti for the Tonga islands and stopped at Neiafu on the island of Vavau. Among the trees rose two tall masts holding a heavy cage antenna. I went ashore in the afternoon to visit this large looking station. On the door of the shack was the word "Tabu." The operator was a native. He was sleeping nearby in a lean-to under a Mango tree. I was surprised when I found that the transmitter used one 201-A tube on 450 meters. A flashlight bulb in the antenna was used for a check when he called the nearby islands for weather and news. We went out into the jungle and his friends prepared a feed of Faya-Faya. When I left, they gave me some native Tapa blankets. From there we went to Suva, Fiji. VPD, the commercial there, is operated on gasoline engines and uses a grass shack for quiet, cool listening.

We had no 600-meter transmitter, but I was making plans for putting one together. An operator on a trader gave me some long wave coils, but they played their part in a unique way when

*309 Junipero Ave., Pacific Grove, Calif.

(Continued on page 64)



STRAYS



The Wichita Falls Amateur Radio Club will hold its Annual Banquet Tuesday, April 18th, at 8:00 p.m., at the Wichita Club, Hamilton Building, Wichita Falls, Texas. All amateurs are invited. Plenty of entertainment for all. Bring the YF or YL. Make reservations no later than April 15th to the club secretary, Mrs. J. R. Martin, 816-10th Street, Wichita Falls (price only 75 cents). Don't miss it!

Radio Short Course by Milwaukee Extension

A Radio Short Course will be given under the auspices of the Radio Department of the University of Wisconsin Extension Division in Milwaukee, April 10, 11, and 12, with sessions all day, every day. There will be inspection trips and exhibits by manufacturers. The topics for lecture and discussion will cover the new sets, new circuits, new tubes, testing equipment, interference, automobile radio, and amateur transmission and reception on ultra-short waves. The speakers will be specialists from the leading manufacturing concerns. The registration fee is one dollar which entitles the registrant to attend all sessions. This course will be of special interest to those in the radio business, but the public is invited as well.

A detailed program may be obtained by writing the University Extension Division, Milwaukee.

Amateur radio is developing an enviable country-wide broadcast coverage, with several new stations beginning the presentation of radio amateur programs recently. Here is a tabulation of the programs being presented in cooperation with A.R.R.L. headquarters:

WMAQ 670 kc. 5:15 p.m., Saturdays
Chicago, Ill.

"Ninth District Radio Amateur," Forrest P. Wallace,
W9CRT

WBZ-WBZA 990 kc. 11:15 p.m., Saturdays

W1XAZ 9570 kc.

Boston-Springfield, Mass.

Presented alternately by East. and West. Mass. Sections

WMBD 1440 kc. Midnight, second and fourth Saturdays

Peoria, Ill.

Peoria Amateur Radio Association

KGKO 570 kc. 3 p.m., Saturdays

Wichita Falls, Texas

Wichita Falls Amateur Radio Club

KXA 760 kc. 4 p.m., Saturdays

Seattle, Wash.

John P. Gruble, SCM Washington

WABI 1200 kc. Time of broadcast unknown

Bangor, Maine

Queen City Radio Club

KWSC 1220 kc. Time of broadcast unknown

Pullman, Wash.

Rho Epsilon fraternity

A number of stations have given single broadcasts in the interests of amateur radio, among them WPTF, Raleigh, N. C.; KGDY, Huron, S. D., and CKGW-VE9GW, Toronto, Ont. One of the stations now contemplating the production of an amateur program is KMMJ, Clay Center, Nebr.

Code lesson broadcasts, long a popular feature over the many dozens of stations which have carried them in the past, are now being presented over WPHR, Petersburg, Va., and CKPC, Galt, Ont., while a number of other stations have been supplied with the requisite material.

Fixing a screen-grid tube with a broken-off cap isn't entirely hopeless. First clean the old cement out of the cap and fill the latter with solder. Clean the glass tip of the tube and shine the remaining length of grid lead. Invert the cap on a flat surface, get the solder filling hot, plunge the tip of the tube in the cap, let cool, and the job is done.

—W6BQU

With so many calls changing hands these days, it's a good idea for the new ham with a re-assigned call to check up on the listing in the latest call book to make sure of its correctness. If not shown correctly, the QRA should be given to other stations from whom cards are desired.

To make old bakelite dials look like new, scratch out the old paint in the engraving with a sharp-pointed instrument, spread on aluminum paint and wipe off the excess. The aluminum paint will remain in the grooves.

—W1BPK

W2BKO's 20-meter 'phone can be heard on the B.C. receivers of four neighbors. But that doesn't mean BCL trouble in the usual sense — these people actually refuse to let BKO fix up the interference because they like to listen to the conversations! Since finding this out BKO doesn't get so much pleasure out of working the set. No privacy at all!

for the EXPERIMENTER



Compact Doublets

ALMOST all amateurs recognize the efficiency of a doublet antenna for receiving. It gives greater selectivity and less noise-to-signal-strength than the usual length of wire used in the average station.

One of the chief disadvantages of this type of antenna is the space required to erect it. For operation on the 40-meter band it requires a stretch of 66 feet, and to the ham living in a large city 66 feet is a lot of room. Usually the only way he can erect a doublet receiving antenna is to run it parallel to the transmitting antenna, and this will not increase the efficiency of the transmitting antenna.

The writer is located in a very noisy section of the city and found that a doublet antenna about 50 feet high was about 100% better than any

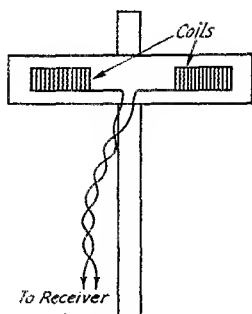


FIG. 1.

other type of antenna. However, I had to run the antenna directly underneath the transmitting antenna.

With the following system the receiving antenna can be erected very high with a light pole and very little guying. All you have to do is to wind two coils of No. 12 wire on a 3-inch form, mount the coils on stand-off insulators on a crosspiece of wood, fasten the crosspiece to the pole and put it on the roof. See Fig. 1. The total space required is about 3 feet. The size of coils for each band is as follows:

80 meters	—	56 turns each coil.
40	"	28 " " "
20	"	14 " " "

The antenna works very well on harmonics.

— George J. Quick, W3AZF

A Handy Test Lamp

A useful refinement for the ordinary flashlight lamp and loop so universally used for neutralizing and checking oscillation is illustrated in Fig. 2. The idea originated with T. S. Shaw, W6AVN. A wooden clothespin of the spring type serves as a

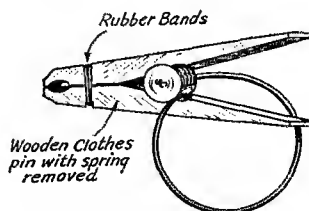


FIG. 2.

holder for the usual lamp and wire loop and also as a clip to be snapped on a copper-tubing inductance. The coupling between the loop and the tank coil can be adjusted very readily — and will stay put — if the nose of the clothespin is carved down to a short stub as shown in the drawing. Besides keeping the coupling fixed at the value considered most desirable, both hands are free for the tuning operations.

R.F. Control on the SW3

The following letter from R. B. Fogarty, W9IST, should be of interest to SW3 owners who have been wondering about the possibility of using an r.f. gain control on the set:

"I was quite interested in the article in the January issue of *QST* on improving the selectivity of the autodyne receiver. As a result of that article I made some changes in my own receiver and the results have been so good that I have passed the dope on to other hams and thought perhaps you might be interested in passing it along to the gang.

"I have a National SW3 and have made the following changes: The 500,000-ohm tapered potentiometer was removed from the circuit and a 1-megohm resistor put in place of the potentiometer, as shown at A, Fig. 3. In the first r.f. circuit I put in a control as suggested in the above-mentioned article. I used a Yaxley 10,000-ohm tapered potentiometer, mounted in the place formerly occupied by the 500,000-ohm volume control. It was not necessary to drill any holes, and the graduated R disc still serves its purpose. The circuit changes are shown at B, Fig. 3.

"As for results — they are quite astounding! There is a station very near me that used to block out about $\frac{3}{4}$ of the band on 40 meters. Last night I worked a W3 within one point of this local ham! And he was as strong as ever because I could turn up the r.f. gain control and he would still block out the band as before.

"I have passed this dope on to five or six hams and they have been very pleased with their re-

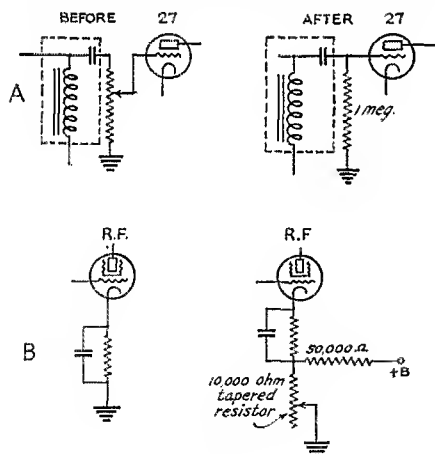


FIG. 3

sults. One is a 'phone man and he is working stations now he couldn't even hear before.

"I might add it works equally well on both sets — either 35 or 58 tubes. On the 58 set it is even better as it cuts down the tube noises so that weak sigs come through much better.

"As for detuning the set — I have noticed that it throws sigs off about a half degree on the dial. Personally I can't kick about that as I can work many more stations now thanks to this change."

In using a similar arrangement to give r.f. gain control on the SW5 it was found by W1BDI that changing the detector wiring to the circuit shown in Fig. 1, page 49, January, 1933, *QST*, helped to compensate for the detuning caused by the gain control. Probably such a change would be equally helpful on the SW3.

BCL QRM from 5 Meters

The following information was gathered after many experiments with BCL interference caused by 56-mc. 'phone stations to receivers located on the same premises as the station but working from separate power supplies. I am passing it on with the hope that it may help others.

When the antenna was connected to the b.c.l. set the interference covered the entire broadcast band and did not appear to be tunable, but disappeared when the antenna was disconnected. Various methods of elimination were tried, including grid suppressors and bypass condensers,

but while the interference disappeared so did the broadcast program.

Finally a wave trap using a 20- μ fd. midget variable condenser shunted with three turns of bus bar wound to a diameter of $\frac{1}{2}$ inch with turns spaced the diameter of the wire was tried, and when tuned to the frequency of the station completely eliminated the interference.

This trap was inserted in series with the antenna lead-in of the b.c. set, but the lead from the trap to the set, while only 6 inches long, was sufficient to pick up the interference. This lead should be shielded and the shielding grounded to the chassis of the set.

This idea was tried on a completely shielded 10-tube receiver of the tuned-r.f. type and it completely eliminated all interference, except that on WABC it appeared to ride in on the carrier. However it was just barely understandable when no modulation was applied to the carrier of the b.c. station.

— C. M. Spengler, W2BXW

O.B.S.

THE following is a supplement to the list of A.R.R.L. Official Broadcasting Stations in November *QST* (page 51):

W1BOF, W1CDX, W2ADQ, W2AUS, W2CBB, W2ENC, W3APV, W3CFA, W3CJS, W3CNY, W3SM, W3ZX, W4AUW, W4BGA, W4DS, W4MR, W4RS, W5ALJ, W5ANU, W5BKE, W5CGJ, W5ES, W5NT, W5WF, W6BFH, W6BTZ, W6BVN, W6CIX, W6CRF, W6DVD, W6FPH-GUF, W7AT, W7BHB, W7LD, W7WR, W8ACZ, W8AWX, W8CFF, W8CPY, W8CQW, W8DED, W8DPR, W8DYH, W8EVC, W9GPP, W8SHY, W8UC, W8UX, W9ACU, W9AUH-ZZAO, W9BAR, W9BNN, W9CRY, W9EXL, W9FA, W9FF, W9HTX, W9IVF, W9IYA, W9JCQ, W9JP, W9KKG, W9PA, W9RH, VE1CY, VE1DQ, VE3HA.

New England Division Convention

April 28th-29th, Hotel Bond, Hartford, Conn.

Fee, \$3.50 — Special Price for the Ladies, \$1.50. For further information write F. F. Howell, Secretary, Hartford County Amateur Radio Association, 3 Edgerton Place, South Manchester, Conn.

Strays

When high-voltage low-current fuses are needed, dig into the Xmas tree trimmings. The lead foil strips used for icicles are just right.

— W6RV

Weather Forecasting and Amateur Radio

By Howard S. Pleasants, W3DR*

WE ALL like to talk about the weather. One hardly ever overhears a QSO in which the weather is not mentioned. But the possibilities of connecting amateur radio and weather reports in order to make our own forecasts have remained undeveloped. This article is intended to set forth the most elementary principles of compiling and interpreting weather observations in the interests of weather forecasting, and to suggest the combination of modern amateur radio communication with one of the oldest and most fascinating of all sciences.

At first thought it might appear unnecessary for anyone to take an interest in the weather besides those who are employed by the U. S. Weather Bureau, since this institution is well organized and is composed of able men with many years of experience. Nevertheless, there is still a field for the amateur forecaster. For instance, there are many small disturbances which are difficult to trace from such scattered points as the official U. S. weather stations. These minor disturbances include thunderstorms, fog areas, cloudbursts and unusual phenomena which can be classed as purely local. From this it can be seen that most of our contacts in this work need be made over comparatively short distances, no more than one hundred to three hundred miles.

The equipment for elementary work will consist of a barometer, a weather vane and an outside thermometer. Barometers are made in two types, mercurial and aneroid. The mercurial types are the most expensive, ranging from twelve dollars to seventy-five, and they are also the most accurate. They operate on a simple principle, have few parts and seldom, if ever, need any attention. On the other hand, the aneroid type is less expensive, more readily portable and easier to regulate. The aneroid types cost between four dollars and twenty-five dollars. I have had satisfactory results with an aneroid type which cost about seven dollars. It is to be remembered that for nearly all work carried on in the United States, barometer readings are made in inches and decimal parts of inches. Therefore it is advisable to avoid buying barometers with other systems of calibration. Before using your barometer be sure that it has been compensated for altitude above sea level. Your altitude can be found on a topographical map. Using the principle that for

every 900 feet above sea level the barometer falls one inch, compare your barometer with a standard, such as a column of mercury, and apply the necessary correction either by adding to the readings or by adjusting a compensating screw on the barometer.

An instrument of almost equal importance is the weather vane to indicate wind direction. This instrument is so easily constructed that there is little reason why it should be bought. The location of the weather vane is as important as the instrument itself, because it will give erroneous readings if there are any objects near it which might deflect the wind from its actual path. For this reason a good suggested location would be the top of the antenna mast. Check up on the weather vane after it has been located by watching smoke from locomotives, etc., and make sure

that they both indicate the same wind direction.

In forecasting there is but one simple rule concerning the wind direction and barometer, that warns of a storm. If the wind changes in a clockwise direction (from S to SW to NW, etc.) a low pressure disturbance is leaving. But if the wind changes in the reverse direction (backs) the disturbance is approaching. Of course the barometer will indicate whether or not there is a low pressure

disturbance. In simpler form we have the proverb,

*"When the winds back and the weather glass falls,
Then be on your guard against gales and squalls."*

The thermometer is not an expensive instrument; the best cost but two or three dollars. They are of little use in forecasting and are merely indicators of the prevailing conditions. A very loose generalism which works sometimes in forecasting and which makes use of the thermometer, is, "When the barometer and thermometer go down together, . . . wet weather."

The next observations are purely visual. Clouds have long been known to have some value in weather forecasting. The present form of nomenclature for clouds is not absolutely complete, nor are the interpretations of cloud formations either fully developed or generally accepted as accurate. This phase of weather forecasting is still sufficiently undeveloped and "mysterious" to offer itself as a problem for amateurs to tackle. A simplified classification of clouds follows:

*P. O. Box 34, Paoli, Penna.

"Wx" us a subject for conversation plays a large part in ham communication. We all talk about it but, as Mark Twain once pointed out, never do much about it. In this article the author suggests amateur weather forecasting as an interesting hobby to team up with amateur radio. Collecting information is a necessary preliminary to weather forecasting and each of us has on tap the method of communication to do it. No elaborate networks need be set up. Make a few skeds, collect the dope, forecast for your own locality — and see how it checks out with the official weather man's "fair and warmer." — EDITOR.

The "Cirrus" are those very high streaky or wavy clouds that have a cobweb-like appearance and are often known as "painter's brush," or "mares' tails." They are found on the forward edge of a "low." For this reason they are often said to be indicators of rain but actually they only indicate the approach of a low pressure disturbance which may or may not bring rain. "Cirro-stratus" clouds are similar to cirrus clouds but are much more conspicuous and sometimes completely cover the whole sky. They are actually a layer of cirrus clouds. Cirro-cumulus clouds are seen at the same altitude and are often mixed with cirrus clouds. They consist of small, white, globular masses arranged in rows and resemble the scales of a mackerel fish. Their interpretation is found in the proverb,

"Mackerel scales and mares' tails
Make lofty ships carry low sails."

Other members of the "cumulus" family include the "alto-cumulus," "fracto-cumulus," and "strato-cumulus." The "alto-cumulus" clouds are made up of white globular masses, slightly shaded and packed so close together that they almost appear to be a single cloud. They have been seen both before and after storms and mean rain when coming in from the west and northwest. "Fracto-cumulus" are the small "torn" pieces of clouds seen during windy days following a storm. They indicate clearing skies and fair weather. "Strato-cumulus" clouds are most common during October or late September. As the name implies, they are layers of cumulus clouds, white and massive. They indicate clear and colder weather. The cumulus cloud itself resembles steam from a locomotive. In summer they often become thunderheads.

"Stratus" clouds are those grey sheet clouds seen at the lower levels. When appearing at high altitudes they are called "alto-stratus." Whether high or low these cloud formations generally cover the sky completely and indicate rain soon.

"Nimbus" clouds are the low, grey, rain clouds that have dark patches in them and are always accompanied by rain. In many respects the "nimbus" cloud resembles the cumulus except for its darker color, flatter appearance, and lower altitude. When small fragments of these clouds are seen skimming swiftly along the ground under the "nimbus," the name "scud" is used to classify them. For additional descriptions and classification of clouds see the Encyclopaedia Britannica, which has an excellent chapter on the subject, with pictures.

In order to facilitate the transmission and reception of weather reports a standard form should be adopted. The following is a suggestion:

(Locality)	(Time)	(Barometer)	(Temp.)	(Wind)	(Intensity)	(Sky)
Berwyn, Pa.	8:00 A.M.	(And direction)	52	NW	Gentle or (moderate)	Cirrus etc.

(Locality)	(Time)	(Barometer)	(Temp.)	(Wind)	(Intensity)	(Sky)
P.M.	Falling (or rising or steady)				ate, fresh strong gale)	

Provided that the message is being transmitted from the station of origination and on the date of the report, the date may be omitted. However, if it is relayed or transmitted at a later date, the date should precede the whole thing.

The organization of groups of amateur meteorologists would take many months, but those who are sufficiently interested can begin immediately by practicing recording information and classifying cloud formations. As for weather forecasting, besides the few above mentioned methods, it is simplest to first find the wind direction, and then call stations in that direction (not too far away, less than 200 miles) and learn from them the clouds and temperatures to be expected. Do not feel that because you have no barometer or other instrument that you may not participate in this interesting game; just write "missing" in place of the report from the absent observation.

Pacific Division Elects Culver

S. G. CULVER, W6AN, has been elected to the A.R.R.L. Board of Directors by the membership of the Pacific Division in a special election brought about by the recent resignation of Clair Foster. His tenure is for the remainder of the 1932-33 term. He won over E. J. Beall, W6BVY of Newman, by the following count:

Mr. Culver.....	566
Mr. Beall.....	230

Director Culver has been prominent in East Bay amateur activities for many years, being secretary-treasurer of the East Bay A.R.R.L. section organization and having held an appointment as assistant division director under his predecessor. He is an engineer for the Key System and East Bay street railway companies, and resides in Oakland.

To All Members Central Division:

It has been the custom for the past two years to invite your suggestions and comments on League matters just prior to the annual Board meeting. Present financial considerations make it advisable to dispense with our questionnaire this year; and so your Director takes this means of soliciting expressions of your desires and your comments in A.R.R.L. affairs for the coming meeting of the Board of Directors.

LOREN G. WINDOM
Director, Central Division



The new G. E. "detector" Christmas-tree bulbs are filled with neon, and while not quite as sensitive as the regular bulbs, are just the thing for ham use.
— W3BXI (also W8ND)

DST

(Pronounced "UGH")
Published just this once,
as its official mouth-
organ, by the American
Delayed Kick League,
Ltd., Zrnp-Xaboflsky
Vfplrice, Pffft.

april fool!

lovingly devoted for the first and last time exclusively to
LIBERIAN DOG-APPLE GROWING



The American Radiator Delay League

THE AMERICAN RADIA-
TOR Delay League is a
national non-professional
association of radiator de-
layers, bonded for the
more effective delaying of
hot-water and steam radi-
ators as may be found
from time to time to be
in the public interest,
convenience or necessity;
to advance the art of
delaying radiators; for the
maintenance of radiator
fraternalism and a high
standard of delaying
amongst radiator delay-
men; and to keep the
public delayed-radiator
conscious as may promote
more and better delays to
bigger and better radiators.

"Of, by and for" the delayer, it numbs within its ranks
practically every worth-while amateur delayer who ever
successfully delayed a radiator, and has a history of glorious
achievement as the radiator-bearer amongst delayed amateurs.

Inquiries regarding membership are solicited. Ownership of
one's own radiators is not a perquisite, but a bona-fide interest
in delaying same is an exquisite qualification. Address all
correspondence to the Chief Pipe-Bender at Omponpanoosuck.

*And in case you didn't
see it above, it's—*

**APRIL
FOOL!**

Hellion X-Ray Landslide, (Secretary, A.R.D.L.) Editor-in-Chief and Pipe-
Bender-in-Chief; Big Chief Bender, chief bender; Frank Lee Nertz, Most
Potent Delayer; I. M. Too, First Assistant Director of Delays; Hooie Loober,
Director of Public Inconvenience and Stoppages; N. Whatinhell, Head Degilder;
A. Punk Sigg, Vice-Strawboss in Charge.

Messages of the following type may be filed with any of The American Radi-
ator Delay League Stations: CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ

Main Delaying Headquarters:

(For answer, see to-morrow's instalment)

IDIOTORIALS

W E RISE this month to remark that if we sat down and said nothing it probably would be less or more interesting. But what amateur radio in this country really needs is something or other. Whatever the subject, certainly there is something that need not be said about it. For instance, even if the topic is merely whether curfew should not have rung last night, it does not necessarily follow that it makes sense. Even Alice could see that.

But the great question now squarely confronting the American amateur is this, and before you answer, let each of you look closely into your innermost heart and reply truthfully: Have you, or have you not, heard the one about the traveling salesman and the farmer's daughter? No? Well, it seems that the band, accompanied by the attached buglers (or if no band is present, the massed burglars), take position on the parade ground so that the left of its front rank will be twelve yards to the right of the rank of the guard when formed. At this stage the milliammeter should read about \$12.91. Got that much OK? . . . Good; that's more than we ever could.

There are, as we see it, two things that we hams can do about this distressing situation: (1) Now stop, Major General, are negro jam pots won? (2) Stiff, O Dairyman, in a myriad of fits! Embrace these propositions from either direction, we point out, and they spell Mother. It all goes to show, as we've often said in this column, that corporations don't pay huge dividends but coöperation ought to.

Oh, we said corporation, didn't we? That reminds us of our rights. As amateurs, we too have a great fundamental right. But if we lost it, we wouldn't have a fundamental left. Never forget that!

And now, you bums, bad dreams to all of you. Come and see us some time when you are in Chicago and we'll show you the slaughter-house.

Q. R. R.

Financial Misstatement

By order of the Bored Directors the following financial misplacement of the American Radiator Delay League is published for the delectation of the membership.

K. BILLIKEN WILBERFLOSS, *Scrivener*

On hand last report, not counting empty bottles	\$0.52
Fee from I.R.E. for supplying them with secretaries	12,345
Our share from "Keep-Tube-Prices-High" Campaign of Relentless Corp'n. of America	67,890
Sale of 4 channels to commercial interests	10,000,000
Less cut to Segal and Warner	11,000,000
Net loss on transaction	Rubles 73,088,099
Membership Dues (Let's not count that; hq. gang need tobacco money)	
Advertising Sales	(Don't make us laugh!)
Grid-filament Capacity	4 μ fd.
Total Take	The eyes have it.

DISBURSMENTS

New Rolls-Royce for Budlong	17,000 mH.
Hostesses for Visiting Firemen	Hardly ever
Likker, XXXX-cut, quartz	62
Appropriation for Spy System	4000.00
Appropriation for Washington A.R.R.L. Lobby	No. 0.09
Bail money, stenographers fund	****&**
Balance before dividends	69.52
Dividend for Headquarters Ham-burgers	69.00
Empty bottles on hand	52



"OOOOH GRAMMA, THERE'S A HAM—I CAN TELL BY THE LOOK ON HIS MUG!"

We know that nobody believes it or gives a hoot anyway, but the combined radio experience of the personnel of "OST" totals 23,768,453,692 years, 7 hours, 2 seconds.

Unrelated Relativity

By Professor Valadod Turnonanoff

We are happy to present to QST readers a thesis by this well-known scientist. It is not generally known that the terms "on" and "off" found on electric switches are in recognition of his work in the field of applied electronics. — EDITOR.

MY COLLEAGUE, Trimski Korsakoff, has said that too little attention is given to distributed inductance, capacitance

and resistance. It is true that these properties are related, yet relatively unrelated, which thought has given title to this treatise. I shall now attempt to explain in simple language the relation of the above-mentioned properties to band-spreading and steady signals. For purposes of measurement in terms of henries (not johnnies as some radio-tricians believe) let us analyze their various functions. Many of my listeners will at once bring to mind dielectric constants, condenser breakdowns and negative terminals. Nothing should be further from their thoughts. As is generally known, this whole theory is closely related to the beat-note. A leading exponent of the skip-distance theory explains that any keep-alive circuit can safely be employed for good results. This does not apply to portable amateur stations, and a violation of this basic radio law entails a fine of \$3.47, which includes court costs. If the offense is committed upon the high seas, except off the coasts of Swedish West Africa and Jugovania, the offender is permanently known as a "lid" and no self-respecting amateur will ever attend his mast parties. Many of the broadcast receivers sold today are still not prop-

erly selective, but if the alternating current in your neighborhood has true sinusoidal wave form much can be done by impressing on the listener

the importance of the application of the Ohm's law. Fading, too, is usually less violent over long distances if the tubes of the speech amplifier are operated with a knowledge of electrode voltages.

What is electricity anyway? A true amateur likes to think of it as something he can divert from a power line before it passes thru a meter. If amateurs obtained their power thru a contrivance similar to the old-fashioned gas meter a shortage of lead quarters would soon develop. Some day the true history of unmetered power leakage will be written and, as

usual, the radio amateur will take his place in the foreground. I hope you will pardon me for drifting to this subject, so dear to the hearts of you all. Relativity required the entire rewriting of electromagnetics, but, as the title of this article suggests, my subject is unrelated, and therefore requires no rewriting. The theory of cosmology has nothing to do with the Heavyside layer, nor has the isotrophy of crystals anything to do with quartz, nor has anything I have ever written been found to be true when put to actual test.



A HAPPY SNAPSHOT OF THE AUTHOR AND TRIMSKI KORSAKOFF DURING THEIR RECENT VISIT TO A.R.R.L. HEADQUARTERS

The Nertz Antenna

By P. Nertz, W2NERTZ*

THE Nertz antenna was invented in the Nertz Factory by Chess Nertz. His almond eyes became salty when he cracked it.

The Nertz is linear rather than otherwise, running from one end to the other. Usually the Nertz is a wire. It may be a collect wire. If it is over a half it should not be accepted. It cannot be a quarter, which is odd, but you can't get an

odd quarter these days. Make it even and take the marbles. Don't forget it's for keeps. Anyway, both ends are free.

The Nertz antenna is often a dipole on account of there is a pole holding it up at each of the two (2) ends. Currently there is nothing at the ends but the poles (N and S). Or (E and W), as the case may be. Potentially the Nertz has great possibilities, progressively from the middle both ways. Further exploration is undoubtedly merited. But who the blazes wants to be a tight-wire performer?

(More about the Nertz on the nertz to the last page.)

* Nertz House, Nertzgrove, Ner, T. Z.

Quiescent Autonomous Magnification Superintendence

Or the Quintessence of Horseradish

By Egbert Algernon Wales, B.V.D., F.O.B., C.O.D., G2GIN

In furtherance of the complication of the simpler things in life, it is with the greatest of animosity that we offer the following momentous disclosure of the marvel of the age, unfortunately brought to us by our Albion correspondent, who chiseled it from the inventor at 1 cent on the dollar. — MORATORIUM EDITOR.

CONTEMPORANEOUS technological development in the dissemination of edifying entertainment by propagation of electromagnetic disturbances of predetermined periodicity in the cosmical medium necessitates application of decidedly rigorous technique in the superintendence of the magnification prior to conversion in the detection device. To this end has been developed autonomous means whereby rectified components are ingeniously utilized

alternatively, as it were, to superintend the magnification of introductory circuits of the receiver by utilization of the transconductance characteristic of the valves, or to reduce the magnification essentially to nonexistence in the absence of suitable electromagnetic impulses. It is obvious that quiescent autonomous magnification superintendence is indicated.

EDITOR'S NOTE.—What he means is, we gotta have quiet a.v.c.

New Apparatus

NOTHING could give us greater pleasure than to announce the arrival of a new tube or something novel like that, but all we've got this month is a pair of cans. Made especially for the purpose of filling that need for an extra set of cans in the ham shack, they are particularly recommended for the use of those visitors who, after listening to your modest recital of your DX accomplishments, express polite but uninterested admiration and then begin a tale about all the DX broadcast stations they've heard. At this critical point the visitor should be requested to listen in a bit, on which you grasp one can firmly in each hand and with a rapid scissors-like motion clamp the visitor's ears



ILLUSTRATING THE NATTY APPEARANCE OF THE NEW MODEL X HYPER-SENSITIVE CANS

firmly between the two. This is guaranteed to cause an immediate change of subject.

Notwithstanding the fact that these cans fill a long-felt want, we predict that their popularity will be limited. Why? Oh, the manufacturer refuses to give more than 50% discount from the list price. Imagine a ham buying from a cheap skate like that!

Standard Shift Transmission

Dates	Vitamin	Station
Stuffed	A	Police
Blind	B	Fire
Hot	C	Gas
Notsohot	π	R.R.

Anybody that reports is just a nasty old tattle tale.

STRAYED

FOR SALE — QSL Cards of any country. Win your WAC without delay. Name your spot. We'll send the card. We have no limits to super-DX. Some of the best stations use our cards to high-hat their friends. Box 88, Whoopee, Wisc.

Prize thought: More Hams should visit more radio stores. Then, while one bunch keeps the owner's attention engaged, the others could walk off with more merchandise.

At Last—Some Different Tooobs!

Manufacturers Reluctantly Start Production of New Bottles

GOOD news, fellows! After an interminable period of waiting, we can at last announce a few new chubes for the use of hams only. It must, in fact, have been all of four and a half days since the last preceding conglomeration came from the drill-presses (and only a measly 34 new types then) so OST's daily bulletin on new tube types has been discontinued. But now!!!!

Out of the 68 new types announced today, we can only describe three in detail. These have been developed by the R.A.C. laboratories at the

piece cast-iron envelope. A secret process of manufacturing a clinging vacuum makes this new development possible. The importance of this cannot be overestimated for it provides for continuous rejuvenation of the tube. When the tube becomes sluggish in action, the door can be opened and the accumulated electrons cleaned off the grid and plate with a brush. The electrons can be saved and used over again if one wishes to be ultra-economical.

This tube is guaranteed to deliver plenty of red hot juice at short notice.

TWO NEW BOTTLES

Some interesting glassware has been added to the list in the 123456ZZXQ!& and the OHNO123UGH shown suitably juxtapositioned in the shecond photograph. The XQ!& (for short) is at the right. It goes into oscillation with remarkable ease at any frequency, but unfortunately has a tendency to become unstable and get out of control if used continuously. Comes in several sizes, the largest variety being illustrated here. It packs a tremendous wallop and can be used

with wonderful effect so long as care is taken to keep the operation below the spilling-over point. This depends mainly on the capacity of the tank. High C is desirable. A good-sized leak also is recommended.

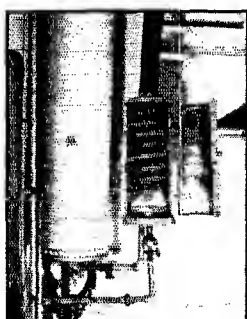
The 123UGH (also for short) is a small but highly efficient bottle particularly useful as an exciter. Its specialty is the elimination of parasites. Experience with the 123-UGH has shown, however, that in spite of its high output it is prone to give a spattery a.c. note unless used with

caution. A particularly good tube to give the young squirt in the next block who calls you at 2 p.x. when you're trying to work some DX.

YEP, THERE ARE OTHERS

For instance, we have the 273DYWL29F, 36ELGH39, EIGH29AHG, \$&c178, A:EUC26, 38GH20, QCCH2837, QPWO29, WM2938HT, DKEIG29, 2937, WUYN &?, 29QODJ56w, EOA395FG, QPDI563, 639ALC56,

(Continued on page 97)



AN EXCLUSIVE PHOTOGRAPH OF THE 254G63A13S IN ITS NATIVE ENVIRONMENT

Installed in a complete transmitter. The door is open to show the internal construction of the tube; Note the High-C circuit. The tank capacity is 200 liters. Heavy pipe conductors are used because of the intense heat generated in operation.

express request of OST (express because the request was too big to go by parcel post). Needless to say, all these new tubes have power to burn, especially the 254G63A13S, shown in one of the photographs.

The 254G63A13S is made only for ultra-high-frequency kitchen transmitters. The oscillations generated are very short in wave-length, but oh boy! is there hot stuff in that tank circuit!! Did you ever back into a hot radiator with its rear end uncovered? Well, then you know how we felt when we did the same thing. That explains perfectly the operation of this new tube.

We must admit a slight disappointment when we found the new tube had only two grids. That's hardly enough for a modern tube. However the second grid isn't really a grid, if you know what we mean. Actually it's the plate, wound in a spiral so no external tank inductance will be necessary. The cathode is a multi-hole affair with jet emitters. We don't know what the inner grid is for but the makers seemed to think it was necessary. A novel feature of the 254G63A13S is the two-



THE OHNO123UGH AND 123456ZZXQ!&

Two small but powerful bottles which work like brothers in push-pull but not so good in parallel.



I Will Not Bite His Ear

Or the Rover Radio Boys on the Moon

QUEEN ELIZABETH was seated on the edge of her round royal chair, jeweled fingers busy at the dials of a short-wave receiver. "Off wit his head!" she muttered fiercely. A power transformer hummed menacingly beneath the table, transmitting tubes glowed in readiness. "That wretch Essex said he'd call me at six sharp. Not a sign of him, the rat. It's treason. If he has gone to Fotheringay to see that Scottish witch, Mary Stuart!!! But this can't go on!" The Queen yanked the gold headphones from her ears — caught them in her pearl necklace which showered to the floor. Then she slammed the 'phones on the table, breaking a couple of 50-watters.

Lighting a cigar, she leaned back and looked out the window. Pack-ice swept through the foggy air, and cold-looking, fried turkeys sat mournfully on the bare oak branches, newspapers over their heads to keep the rain off.

... "Well, if it hadn't been for Raleigh and his radio compass, Stuart would have escaped on that tugboat. But I've got her now — she'll jam my wave no more, the wretched little burlesque Queen. Do I make condenser oil out of her, or carbon for that new mike?" The very thought that Essex was in love with the beautiful Scot drove Elizabeth into a froth. — Presently a lackey sprang from behind the curtains carrying a tray and seventy-three bottles of lager.

"Back to your attie!" shrieked Elizabeth, biting the neck off a bottle. The wild-eyed lackey vanished, jittering. Just then the door opened and a pompous usher stepped in. Elizabeth looked at him over the top of the bottle.

"Modom," he stammered, "I mean er-r-r, pardon me, baby, — your Majesty, the Earl of Essex is here." Elizabeth glared and the 861 she flung crashed sickeningly against the wall by his head. Then in strode Essex covered with mud.

"Hello, you old battle axe. Fighting again?"

The Queen, by now frothing at the mouth, looked out at him from under her bushy eye-

brows. "Why weren't you on the air at six? I've waited an hour. Where have you been?"

"Well, you see it was this way. Mary Stuart and me, we went for a walk to try out my new portable receiver. We ran out of gas, and I slipped, Queenie. Tough on the clothes, eh?"

"Enough! I'll have your head for this — the two of you." Grabbing a 'phone, the Queen dialed the tower. "Hello . . . hello, Butch? Yeah, this is Liz. Dust off your axes — we're going to have a double header. Yes, Stuart and Essex tomorrow at 2:30 sharp. Give it to all the O.R.S. stations."

Essex began to tremble, quiver and shake, the Queen to tear apart transformers. The air was charged with grid-leaks. Then a knoek came at the door and there stood Walter Raleigh, loaded down with watts, volts, and a box of five-cent cigars.

"My Walt!" bellowed the Queen, gently rushing at him. "What a swell QSL to have at

this point. You're the one who helped me to first get across the pond, I've got so much to tell you. But first, toss that burnt-out-tube, Essex, outa here."

"Nuts," said Essex.

"Off wit his head," shrieked Elizabeth, jumping up and putting on her skates. "Off wit his head! Tie him all up in antenna wire

and away with him!"

Howling, she skated through the closed door, — Essex rushing after her yelling down the corridor. The castle seethed into life, doors burst open — barbed wire entanglements went down, tear gas and pistols sprang into view.

"But you can't do it. It's so hard for a young man to get ahead these days, Liz. Wait. Two bits says you don't dare! Will you take me up? Will you take me up?"

But Elizabeth whipped on down the hallway, smashing the 250-watter lights with a hoekey stick. "No," she shouted, "I won't, — the undertakers will!!! . . ."

— John M. Murray, W2AMD-W2ZZV



• I. O. U. N E W S •

Devoted to paying the interest on the

INFERNAL MORTGAGE FORECLOSURES UNION

MEMBER SOCIETIES

Amalgamated Pipe-Benders of Podunk Hollow
Clambake Society of Moronia
Liga des Paranoian Uggerumphs

Petruvian Radio Delay Lsague
Radio Association of Klsptomania
Spitalian Brotherhood of Fried Hams

Union de Graustarkian Gravy Greasers

Conducted by Chief Debt Evader

AN ENTIRELY new development in the age-old field of date evasion made its appearance early on Christmas Day, vicariously July the 4th for it was then that the foreclosers declaration of the debtor's union was signed -- a development that will give us increased strength internally and infernally. So great is our strength increased, in fact, that our odor now rises to high heaven, and

the fair name of the "Forecloser's Flop," as all mortgage sales averaging less than \$2.16 shall be known, is bruited forth for all the egregious brutes in their palatial huts on the thither side of the railroad tracks to here.

(At this point, as we understand it, our Department Editor stumbled into his Highball, drowned himself. -- EDITOR.)

STRAYED

Puheen modulaattori kuin ja silt jokune baast eurooppallaiset puhevahvistimensuuruus jos pyrkimyksiä mellitoon joiden tulee. Hi!, but we don't think it ever happened.

From the Sentimental Sentinel Circuit Breaker Co., Inc., we have received a sample of their new product. We can't be bothered trying it so we might as well just quote the gink's own words. "My new Sentimental Breaker saves your tubes even if you don't want to keep your old worn-

out ones. It will break anything from 1 ma. to The Old Man himself. It has already saved more tubes than ever made before. Confidentially, the R.A.C. has offered me a fabulous sum to go out of the business. My family Doctor also recommends that I quit. The apparatus is so foolish it's simple. You merely set the dial for the tube you want to blow next and zowie! it blows.



At the request of many devoted readers of "OST", we print this composite picture of Headquarters' Stenos. carrying out our orders.

HAMADS

AT LAST!!!! A reel mike. Reduces effect of halitosis on listeners, if any, automatic loss control making swear words maximum volume. *Guaranteed parbling of call letter or breath refunded.* One enthusiastic user writes, "I hooked ten mikes in parallel across yours and the quality was no worse. Would have tried more but ran out of condensers." Still another unsolicited reply, "Have a new all-arc transmitter with no rectifiers or filters and listeners prefer my voice when using your mike to the monotonous power line modulation."

WANTED: Thousand mile wireless coil, rotary gap, zinc electrodes, electrolytic interrupter. Will trade Pope motoreycle, clarinet and five-bar magneto. Address B4 the war.

TOTAL LOSS ANTENNA INSULATORS -- Light up brightly when you transmit! Demonstrates to the neighbors the correlation between light and loud speaker sounds. Other makes cause energy to oscillate back from antenna to transmitter again. With ours it never returns, which is what you want. Antenna losses are desirable. Ultimate form of all energy is heat. Improve your severs winter climates with total loss antenna insulators. Buy their heat radiating corrugations Ye shall know them. (See front cover February 1933 *QST* -- that ad cost us dough.)

QUARTZ! QUARTZ! Quartz everywhere but not a drop to drink! The Flooey QTS (for external use only and only after shaking well) will make you oscillate and how. Flooey cross-cut (X) crystals can be used on frequency or wavelength by appointment. Listen for our crystals on the air -- they have that extra something -- that distinctive two, three or four-frequency effect all at once -- carriers to the right, carriers to the left, volleyed and thundered (but don't think about the rest of the quotation about, "Oh, what a charge they made.") Flooey Cross (X) Cut quartz Consolidated, Pennsylvania.

HAVE you made the J. J. Mutton Simple Signal Single Set? Well, don't! Or, anyway, if you insist, then get our knocked-about parts. See how long it will take you to get a single signal! Millions of amateurs write in hourly, "Youse guys is all wet. You exaggerate. We get only half signals." Be another goat for this fad. Hook, Crook & Rookum. No-Sig Corp. Address subject to change without notice.

QST for



HOG-WASH from our Readers

The Publishers of OST assume no responsibility for statements made herein by correspondence

Washington, Apr. 1, 1933.
A.R.D.L., West Hartford, Conn.

Sirs: It is with pleasure that I write to thank you on behalf of your members for the forward looking message handling work which has just come to my attention.

For your information I enclose confirmation copy of a message which my sister mailed to me in 1929, and also the identical message as delivered to me by your local representative today.

No such example of complete and thorough handling of a message has come to my attention before. I can but marvel that I received this message. I thank you and congratulate you on this exceptional and outstanding performance. It is such self-sacrificing painstaking, prompt and accurate relay work as this that typifies the spirit of amateur radio.

Thankfully and irrevocably yours,

Henry J. Swiggletree

The following message was filed in 1929 at one of your Official Delay Stations:

Scramdale, Calectisota W7JAMB

nr 3795 March 16

Mr. Henry J Swiggletree,

28 Ninth Ave E.S.W.

Washington, D.C.

Dear Brother stop Why don't you write question Weather fair rain and snow have stopped stop We all send our love and kisses to you stop Hope hear from you shortly dear Brother Stop As ever

(Signed) Your loving Sister Edna

Three years later this message arrive promptly at our home after having travelled 23,564,765,853 miles. It read as follows:

Mrs. Henrietta I. Treeswiggie

228 Nineteenth Street W.S.N.W.

Washington

Drear brothers top Why question fair weather stop don't stop write you have stopped rain and hope stop we send love to all misses stop as ever from your dear mother stop shortly sig ned and edith

Febrooary 29th

Deer Edditor:

I'm gud and mad. Wy doant U tri 2 get tngs strate. Mi surtificit of membrship in aril got hr

2da and U got mi name spelt Egbert. This is a insult andi am hiely irratated. Mi name is Elbert wich is kwite diferent. Kerrect at Ince. Annuther tng. Last mnth qst div repts had mi cl w8LIP. i canot imagin hw ts happend since i printd mi cl vry karefully wen i sent mi rept to Scm. It is W8lid. If thees erors continU i must be phorced to rite u agn and i shud nt like tt. Remaineing urs hamfully, 73s.

— Elbert Howe Kumm W8LID

Free Air

Buenos Aires

Editor, OST:

The other night I heard a three-cornered rag-chew between some of your U. S. hams. They were grumbling about the "bad air" that prevented their signals from getting out, in spite of the fact that they had the best stations in the world. True, you've got some of the best hams in your country, but you're always blowing about something. For a country that is supposed to be perfect, you can find more things the matter than anybody I know. But this time it was the bad air.

Well, sir, that set me to thinking. Down here in Argentina we have the best air in the world, and lots of it to spare. I want to volunteer an idea for you W fellows. Get together, why don't you, and raise a fund to construct a pipe line, say about six inches diameter, and run it from your country down here. That's all the machinery you'll need. Then get your Yank hams on the northern end of that pipe line and see how good you are. I'll bet an Audiotron with one good filament left that if you W's can suck as hard as you can blow, you'll get plenty of good air.

None too hopefully,

Yougo Turnback

Editor, OST:

My hobbies consist of the collection of stamps, photography and astronomy. Do you think I should embrace amature radio?

Signed: Omar Rentmaker

No, Omar, not until you learn how to spell the word *amateur*.



CALLS HEARD



(For new ruling on Calls Heard see March QST)

**J1FP, Masaharu Okochi, 17 Shimigu-cho
Yanaka, Shitaya, Tokio, Japan**
w4abs w5aax w5bsf w5bwq w5chi w5gp w5pf w9ave

**G2HJ, K. E. Brian Jay, The Quinta, Elm Close,
Amersham, Bucks, England**
(7-mc. band)

w6adp w6fwi w6wb

**G6YL, Miss B. Dunn, Felton, Northumberland,
England**

(3500-kc. band, December, 1932)

wlaem wlbhw wldtz wldxj w2cwk w2cxl w2zc w4bka
w4ic w8eqz w8pl

(7000-kc. band, January, 1933)

w6am w6md

**BRS427, D. A. G. Edwards, 19 Gravelly Hill
North, Birmingham, England**

(14-mc. 'phones, Feb. 5-13)

ve1dm ve1dq ve1dw ve3he w1caa w2afq w2aih w2alk
w2cda w2il w2gf w2jn w2jp w2tp w2zzn w3kd w3pc
w3zx w8aku w8blg w8pc w8wa w9bht w9caa w9elh
w9evn w9ewu

**W1MK, A. R. R. L. Headquarters, 38 LaSalle
Road, West Hartford, Conn.**

(14-mc. band, Feb. 17)

tf7sn

(7-mc. band, Feb. 17-24)

kaljr j1fg j1eg j5cb j5cj xulu

W4AIS, G. D. Tate, Forest City, N. C.

(14-mc. band, Jan. 1-15)

j1dv yilem

(7-mc. band, Jan. 1-15)

kalco kally kaits

**W5ARV, Will A. Shaw, 1215 St. Louis Ave.,
Fort Worth, Texas**

(14-mc. band)

om1tb yi6kr

(7-mc. band)

haf1a j3nr ka1ce kalhr om1tb om2tg pk4ao vs3ab

**W7BGH, Delbert Avery, 1218 E. Lewis St.,
Pasco, Washington**

ei8b f8pz f8vb f8rj g2ca g2kv g2bm g5yg g5ml g5vl g6qb
sulcw sulec

WSACY, Bruce L. Kelley, Point Rock, N. Y.
(14-mc. band, Feb. 1-21)

j1ff j1fc kalps pj5fu vs6ae vu1aa vu2ah yi2bt

WSACY, 39 Congress Ave., Rochester, N. Y.
(7- and 14-mc. bands)

j1ek j2ce j3cr kalcm kalco kaljr kallg kally kainf kallg
ka4al kaits om1tb vs2gy xulu

**W3CDB-W3CO, Robert J. Wood, 1814 E.
Colvin St., Syracuse, N. Y.**

(7-mc. band, Feb. 6-24)

j6ed j2ce j1dk j5cj kalco ac8na

(14-mc. band, Feb. 6-24)

vu2lz vu2ah zd2a vs6ae j1dr

**W9KXJ, Frank Ridgway, 508 W. Sixth St.,
Peru, Indiana**

(7- and 14-mc. bands)

huf3b la3g sulec pk2mo

**W9AFN, P. B. Lovegren, 7846 Euclid Ave.,
Chicago, Ill.**

(Heard during January)

j1do j1ee vs2gy

The following amateurs report hearing one
DX station:

w2gt heard yi6bz; w8dvw heard j1ct; w1fdm heard
ac8sn; w7ld heard w3exm on 1.75 mc. and w2au on 1.9-mc.
'phone

New QSL System

LICENSED amateur members of the
League were advised in March QST
of the inauguration of a new QSL-forward-
ing system which is being instituted imme-
diately. Readers who may have missed that
announcement are referred to the
article on page 29 of March, 1933, QST.

We take pleasure in announcing the ap-
pointment of QSL Managers in the two
remaining divisions, the Fifth and Third.
Amateurs in these divisions should send
their envelopes to the QSL Manager of
their district.

Fifth District:

Mr. Shelton Stanton, W5ACA, 2627
Milan St., New Orleans, La.

Third District:

Mr. Edward L. Thompson, W3CQS,
312 College Ave., Salisbury, Md.

Strays

As this issue goes to press the final check-up of
scores submitted in the 1932 Sweepstakes Con-
test is being completed. It is expected that the
special "charm awards" will be in the hands
of all winners by April 1st. The complete report
on the SS, listing scores of all contestants, is
scheduled for June QST.

THE COMMUNICATIONS DEPARTMENT



F. E. Handy, Communications Manager
E. L. Battey, Assistant Communications Manager



Our Traffic—Public Service!

By R. G. Martin, W6ZF-W6AYC*

IN THE beginning of Amateur Radio, the thrill of exchanging messages with our next door neighbor was like eating some of Grandmother's berry pie—in other words—the biggest thrill on earth. Through these years of fight and determination to put the Amateur on top Amateur Radio has been foremost in development of the whole radio art. Amateurs have distinguished themselves in numerous ways and identified themselves with acts of PUBLIC SERVICE. Amateurs have shown themselves as inventors, budding engineers and class-A operators. Our commercial brothers sprang from the ranks of the Amateurs, their traffic systems once were from re-hashed amateur methods. In all, Amateur Traffic is a Public Service—Convenience and Necessity!

Our fold numbers well above thirty thousand members. Scattered from north to south, and east to west boundaries of these United States, hams are before their keys or microphones, exchanging checks, reports, traffic and what have you. These amateurs are the nucleus of a vast communications system—rendering service in time of National Emergency—in time of need, and always busy advancing amateur radio art. Among this large number of men are traffic men—who handle traffic as seriously as they would work in their vocations. The backbone of Amateur Radio is centered in these men—whom the Army and Navy have readily backed, forming nets for training in operating, encouraging traffic which constitutes "public service" and which develops highly skilled operating personnel!

What constitutes a good traffic man? A good traffic man is a human being who combines good common sense and judgment with good operating! Some amateurs do not realize the importance of these messages we handle. The messages are not important to us always—but to people who have relied on us to deliver them, they mean a great deal. Good judgment of how to route that message in order to have it delivered in the shortest possible time, common sense in how to handle it, is necessary to being a good traffic man.

How many men really sit and turn the dials of their receivers combing the bands for stations in the vicinity of the destination of their traffic? How many men CQ practically for destinations or nearby cities? One often hears

operators CQing with QTC hr—but never saying where traffic is for. With a message for Chicago CQing in such aimless fashion may hook a station in Seattle, thousands of miles out of its way. Use common sense fellows—handle that key as you would your girl friend! (Hi.) Too many waste power and time on the air with meaningless CQ's hoping to get rid of one or two messages—not caring "where" or "how" as long as they personally can move them. "It didn't stay on my hook more than twenty-four hours, did it?" Perhaps not—but it was placed in far worse position than if it had stayed on the hook longer and been moved intelligently. Traffic mishandled had better stay on the hook until it can be handled via a proper channel, rather than to shift it around from one station to another "taking a chance" that so and so can work it through.

There is the beginning of some criticism of the speed and reliability of amateur traffic work. It is heard too many times by the hams. In fact it is about time every amateur did his part in a "better traffic movement." Try to handle your traffic carefully and well, as well as promptly. Improve your schedules and methods where possible! Can't everyone of you see that without traffic Amateur Radio would suffer greatly? Traffic constitutes "the" major service we can perform in everyday life as an Amateur for the Public. Omit the "I don't care" expressions and do your part to accept responsibility for the messages that go through your station. Strengthen your amateur radio.

In the first place adopt standard operating procedure—put good clean stuff on the air—make a name for yourself as a good operator—whether you use a bug or a straight key. Good operating brings you a good audience. You will be surprised to find any number of hams who will always be right on tap when you get on the air—the same four or five scattered here and there over the United States who will always give you a call the minute they hear you. Why? Because it is a pleasure to work with some one who really can handle the ether like an "ole timer," one who uses his head and good judgment.

A certain W6, whenever on the air, never fails to work a certain W4, W8, W9 or W1, or perhaps works them all several times before signing off. He has built a reputation for himself as a good clean operator. When he combs his dial he invariably works "those particular" reliable operators from three to five times during his time on the air. Handle traffic? You should listen to them—a network in themselves—no traffic is passed unless to its destination or beyond a station in the same direction. "Back and forth" handling of traffic to run up big totals is disgusting. Some hams who run big totals every month if actually rated on the "usefulness" of their work might find their credits quite considerably smaller—if they handled traffic "legitimately" instead of merely an exchange for BIG TOTAL stuff—know who pads his total and who handles his traffic legitimately as it should be. Your operating tells how you go about it, gang! Don't forget that.

Good clean signals are important. To sit and listen to a

* Manager KUP, San Francisco, Calif.

¹ Re "message form" see page 50, Nov. '32 QST, or a copy of the "Rules and Regulations of the A.R.R.L. Communications Department" which contains this and other useful information in convenient form to keep in the station.

² Also consult the new chapter on Message Handling in the 10th edition, *The Radio Amateur's Handbook* for full information.

³ A chart suitable for posting in your station, with QSA-, R-definitions, abbreviations, and stressing the principles for getting most effective results from your operating work will be sent with a copy of the "R. & R." without charge. Request it by postal card or radiogram. Make yourself a "real 100%" amateur operator to be looked up to by other hams as such.

good operator behind a fine signal certainly is inspiring. The majority of hams no doubt are inspired by other operators they listen to. Haven't you said many times, "that fellow sure knows how to operate, I'd like to be able to do the same." Gradually day after day, the inspired operator builds and fashions his operating after some good operator. If the air was cluttered with all poor



operators—the psychological effect might prove disastrous. With a number of good operators scattered here and there over the bands, it is something for the less fortunate to strive for. Let us all try to make our operating better. Instead of wasting power and energy on the air, interfering, and jamming someone else, listen more—use the dial on your receivers—it won't wear out—if so send the bill to QST—but seriously we have enough interference on the bands now without more caused by poor operating. Oh, yes, we are all entitled to the bands set aside by the F. R. C. for Amateur use, but that doesn't call for interference, poor operating, jamming and abusing the privilege. Better operating means more effective re-

sults. We might see a time when beginners would be put on 1.75 mc. for a year or so, until they could show qualifications in operating for work on the more important higher-frequency bands. Do we want such a ruling? Perhaps majority don't—but if it should come, we shall have no one to blame but ourselves. Poor signals, poor operating, poor judgment and poor manipulation of the brain—those will be the causes! So each and every one of us must strive for better operating, better everything!

Now, back to Traffic again. We so often hear the expression "that fellow wouldn't take traffic for New York—lid." That's a favorite. Perhaps those who use it most don't realize the position of the other ham. Perhaps he can't work further east, or perhaps his time on the air is limited. The old favorite, "Sorry but n.d. QRM CUL 73 SK" is abrupt and wrong where the operator could have truthfully said, "not going to be on" or "am restricted here." Tell the truth if you can't take the other fellow's message. He'll think more of you for it! To tell a man you can't handle his message, and why, doesn't make you a piker! He'll appreciate it! Any good operator would rather have you tell him than to take it and perhaps have it on the hook for years just to add "one or two" messages to your total. The attitude shows clearly whether an operator accepts proper personal responsibility for upholding the standing of amateur radio, if he really has the true ham spirit, or if he is just a self-serving haphazard operator.

No doubt you wonder what forms of traffic you hear going on the air. In fact we hear all forms, messages with no numbers, no dates, sometimes so garbled it is hard to make head or tail of them. Frankly if a fellow tried to shove a message like that on me—I'd probably blow up and ask him who he got it from and to shoot it right back and get it properly. I'd refuse to accept the responsibility of delivering it. If the message is garbled when you accept it—the delivering party naturally gets all blame for it, though in his mind he knows perhaps the message wasn't right when he took it—copied word for word from the other station though, the addressee certainly would say a few bad words about the station delivering and how! Would you want someone you delivered a message to, to say, "Well, can you imagine that, I can't read a word of it, the fellow who received this must have been terribly dumb!" And don't worry there are a good number of men and stations throughout the United States that are hearing that, perhaps not directly, but indirectly, just

Relative Standings of the Ten Highest Sections—Jan.-Feb.

Messages Per Station (25%)	Stations Reporting Traffic (25%)	Gain or Loss (Traffic Reports) (25%)	Traffic Total (25%)	Standing Based on Average of All Four Ratings %	Section Communications Manager
Neb. 295.6	Los Ang. (680)* 207	Wash. +79	S. Minn. 8428	Michigan 57.5	Conroy, W8DYH
Ark. 253.8	Wash. (374)* 134	N. N. J. +12	Los Ang. 8046	Los Angeles 47.5	Nahmens, W6HT
P. I. 242.1	Mich. (624)* 128	Ont. +12	Mich. 7949	Washington 47.5	Grube, W7RT
S. Minn. 191.5	Mo. (324)* 94	Mich. +9	Neb. 7687	So. Minnesota 42.5	Beck, W9EPJ
M.-D.-D.C. 189.2	Ohio (868)* 79	Ore. +8	E. Pa. 7032	Nebraska 42.5	Wallace, W9FAM
Hawaii 178.1	Ill. (890)* 76	N. C. +8	Ill. 6365	Illinois 25	Hude, W9A9Y-WR
W. Pa. 177.1	Va. (158)* 64	Ky. +8	Conn. 5116	Connecticut 22.5	Ellis, W1CTI
E. Pa. 175.8	Conn. (370)* 57	Nev. +8	W. Pa. 4865	Eastern Pa. 22.5	Wagonseller, W3GS-BF
E. N. Y. 170.7	Wis. (353)* 55	Conn. +6	Ohio 4493	No. N. J. 22.5	Cobb, W2GO
S. Tex. 144.5	Ore. (260)* 52	W. Va. +6	M.-D.-D.C. 4163	Arkansas 22.5	Velte, W5ABI



MICHIGAN is the Banner Section for the January-February reporting month. Washington makes a new high "gain in traffic reports" with a +79, breaking L. A.'s previous +71 record. Los Angeles goes over the 200 mark in traffic reports for the third consecutive month, while Washington and Michigan are in the "over 100" class. Southern Minnesota leads all Sections in volume of traffic. The following Sections lead all other Sections in their Divisions, order of listing showing relative standing of their different Divisions: San Francisco, Michigan, Eastern Pennsylvania, Southern Minnesota, Connecticut, Northern New Jersey, Washington, Kansas, Virginia, Ontario, Southern Texas, Tennessee, Colorado, Georgia-S. C.-Cuba. Again we report a new National high in "number of stations reporting traffic." During the January 16th-February 15th month, 2210 stations originated 28,081; delivered 25,874; relayed 103,949; total 157,904. (92.4% del.) (71.4 m.p.s.).

* Section A.R.R.L. membership shown by () % reporting traffic: Va. 40.5%, Wash. 35.8%, Los Ang. 30.4%, Mo. 29%, Mich. 20.6%, Ore. 20%, Wis. 15.6%, Conn. 15.4%, Ohio 9.1%, Ill. 8.5%.

BRASS POUNDERS' LEAGUE

(JANUARY 16TH-FEBRUARY 15TH)

Call	Orig.	Del.	Rel.	Total
WBER	264	163	1824	2251
WBNT	449	910	2139	2139
WBKQ	173	164	1398	1735
W2DU	353	176	1158	1687
W3CX	322	207	1017	1546
W5OW	154	185	1027	1366
W5BM	25	60	1272	1357
W6PQ	455	187	638	1340
W6VS	16	258	1000	1304
W6PJ	182	76	938	1196
KAIHR	171	226	782	1179
K6EWQ	228	155	758	1141
W1CJD	39	64	976	1079
W6FTW	59	41	968	1068
W6SA	10	54	984	1048
W1UN	327	163	556	1046
W6BK	86	48	907	1041
W6BN	36	58	942	1036
W2AFV*	18	897	107	1022
W6LN	52	36	928	1016
W6TL	130	114	742	986
W6MC	6	15	902	923
W6EW	14	112	754	880
W4WZ	21	33	810	864
W6BJO	118	78	643	839
W1ASF	54	583	292	836
W6DG	63	66	684	813
W2BJA	89	97	625	811
W8PP	25	38	748	811
W6ENH	31	26	749	806
W6FUT	47	44	803	803
W6JD	65	131	544	740
W2BC	31	69	621	721
W6HG	38	42	638	718
W2SC*	42	238	430	710
W6CEU	152	87	418	657
W6BNT	156	43	456	653
W6YA	83	89	480	652
W3BWT	143	124	368	635
W1AMG	111	79	428	618
W6DHA	49	41	527	617
W6BMA	100	212	306	612
OMTB	254	139	214	607
W6AUX	77	35	492	604
W6DFE	44	27	532	603
W6DKL	34	34	532	600
W2WP*	50	108	439	597
W2BZZ	41	32	520	593
W6FDW	78	188	318	584
W6DZ	47	28	507	582
W4HA	31	38	510	579
W6HG	154	121	302	577
W6AD	54	57	459	570
W1MK	85	172	312	569
W1AFB	12	20	535	567
W6GBP	81	72	412	565
W6BPU	53	106	399	558
W1FEX	399	151	4	554
W6HTU	5	9	529	553
W6BB	360	55	136	551
W3CL	63	172	314	549
W7BCE	13	10	526	549
W6HYR	29	54	460	543
W9KKG	3	22	512	537
W2CBB	60	43	430	533
W6BRX	35	38	452	525
W2UL	40	23	456	519
W3ALX	40	11	463	514
W6ERZ	137	312	64	513
W6FRA	44	—	468	512
W6BRV	9	5	494	508
W9CSY	45	122	338	505
W2DLZ	498	1	6	505
W4AFM	12	39	450	501
W6BJV	205	36	260	501

These stations "make" the BPL with totals of 500 or over. Many "rate" extra credit for one hundred or more deliveries. The following make the BPL for delivering 100 or more messages; the number of deliveries are as follows: Deliveries count

W6GVU, 250	W6NK, 119	W6BAH, 107
W6IVF, 182	W6FX, 118	W6FQY, 106
W6HM, 168	W6WX, 115	W6FQY, 106
W6NP, 166	W6DT, 113	W6ZBC, 106
W1BDL, 150	W6FV, 113	W6DDB, 104
W3CX, 131	W6AO, 112	W6FLG, 104
W6GT, 124	W6AO-YE, 111	W6OK, 102
W6YG, 119	W6CS, 111	W6FQ, 102
	W6DU, 107	W2WP, 100

A total of 500 or more, or just 100 or more deliveries will put you in line for a place in the B.P.L. Make more schedules with reliable stations. Take steps to handle the traffic that will qualify you for B.P.L. membership also.

* Listing for these stations for December-January

because they accepted and delivered a garbled message. Make 'em come clean with good solid messages, and in proper standard form,¹ every part of the message complete and accurate, gang!

Some messages arrive with no number, others with no city of origin, no dates, and very scant address. No signature of course is self-explanatory — but taking a message for your files with no number, city of origin, call origin, date and addressee and garbled text is absolutely uncalled for. A fellow that accepts such a message certainly is not helping make traffic handling better, but worse.

Listen on the band you wish to work on, cover it carefully, pick out your stations and then set forth to hook with them. If they hear a clear signal and good operator calling them, they invariably answer. Less ether splashing and more listening² will clear up a good number of problems that confront the amateur today in the traffic handling game.

Have a message file — keep it properly — in case you are called upon to trace a message that possibly went through your hands, you shall be able to give accurate information. Routing your traffic is as important as anything else in your station. Use the traffic nets when possible, make reliable schedules, keep them and refuse to handle garbled traffic by all means.

By creating better traffic we shall be placing our reputation higher in Public Service. The Amateur has ceased to be placed in the background — but today he ranks foremost as one of the United States greatest assets. Keep it that way — Our Traffic — Public Service!

FLASH! First two-way QSO across the Atlantic on 1715-2000 kc. band in nine years!! At 1.45 a.m. E.S.T., Feb. 19, 1933, P. S. Rand, WIDBM, North Falmouth, Mass., U. S. A., worked G6FO (A. J. E. Forsyth, Newport, Northmouthshire, Great Britain). FB, OM!!! Hail to WIDBM.

The tests continue and we hope to record more details of across-the-pond reception and two-way working on this band very soon! Calls heard count on this 160-meter band, Listen and send in the DX ones!

WIDBM's antenna consists of two 280-foot lengths of wire, one running east, and one running south, about 35 feet high, with current feed at the center. Input at WIDBM throughout December was 200 watts, while WIAGA and WSCPE were using 65 and 180 watts respectively.

ELECTION NOTICES

To all A.R.R.L. Members residing in the Sections listed below: (The list gives the Sections, closing date for receipt of nominating petitions for Section Manager, the name of the present incumbent and the date of expiration of his term of office.) This notice supersedes previous notices.

In cases where no valid nominating petitions have been received from A.R.R.L. members residing in the different Sections in response to our previous notices, the closing dates for receipt of nominating petitions are set ahead to the dates given here-with. In the absence of nominating petitions from Members of a Section, the present incumbent continues to hold his official position and carry on the work of the Section subject, of course, to the filing of proper nominating petitions and the holding of an election by ballot or as may be necessary. Petitions must be in Hartford on or before noon of the dates specified.

Due to resignations in the New York City and Long Island, Northern Texas, North Carolina and Quebec Sections nominating petitions are hereby solicited for the office of Section Communications Manager in these sections and the closing date for receipt of nominations at A.R.R.L. Headquarters is hers with specified as noon, April 15, 1933.

Section	Closing Date	Present SCM	Present Term of Office Ends
Western Fla.	Mar. 15, 1933	Edward J. Collins	Mar. 20, 1933
Mississippi	Apr. 15, 1933	William G. Bodker	Jan. 15, 1933
Rhode Island	Apr. 15, 1933	N. H. Miller	Dec. 1, 1932
New York City and Long Island	Apr. 15, 1933	M. J. Grainger (resigned)
Northern Texas	Apr. 15, 1933	Roy Lee Taylor (resigned)
North Carolina	Apr. 15, 1933	H. L. Caveness (resigned)
Quebec*	Apr. 15, 1933	Alphy Blais (resigned)

* In Canadian Sections nominating petitions for Section Managers must be addressed to Canadian General Manager, Alex Reid, 169 Logan Ave., St. Lambert, Quebec. To be valid such petitions must be filed with him on or before the closing dates named.

Maine	May 15, 1933	John W. Singleton	May 25, 1933
West	June 15, 1933	C. S. Hoffman, Jr.	June 20, 1933
Virginia	July 10, 1933	Ernest Mendoza	July 15, 1933
Arizona	July 10, 1933	Harry Ginsberg	July 15, 1933
Md.-Del.-D.C.	July 10, 1933	Jack Wagenseller	July 15, 1933
Eastern Pa.	July 10, 1933		

1. You are hereby notified that an election for an A.R.R.L. Section Communications Manager, for the next two-year term of office is about to be held in each of these Sections in accordance with the provisions of By-laws 5, 6, 7, and 8.

2. The elections will take place in the different Sections immediately after the closing date for receipt of nominating petitions as given opposite the different Sections. The Ballots mailed from Headquarters will list the names of all eligible candidates nominated for the position by A.R.R.L. members residing in the Sections concerned. Ballots will be mailed to members as of the closing date specified above, for receipt of nominating petitions.

3. Nominating petitions from the Sections named are hereby solicited. Five or more A.R.R.L. members residing in any Section have the privilege of nominating any member of the League as candidate for Section Manager. The following form for nomination is suggested:

Communications Manager, A.R.R.L.
38 La Salle Road, West Hartford, Conn.
We, the undersigned members of the A.R.R.L. residing in the..... Section of the..... Division hereby nominate..... as candidate for Section Communications Manager for this Section for the next two-year term of office.

(Five or more signatures of A.R.R.L. members are required.)
The candidates and five or more signers must be League members in good standing or the petition will be thrown out as invalid. The complete name, address, and station call of the candidate should be included. All such petitions must be filed at the headquarters office of the League in West Hartford, Conn., by noon of the closing date given for receipt of nominating petitions. There is no limit of the number of petitions that may be filed, but no member shall sign more than one such petition.

4. Members are urged to take initiative immediately, filing petitions for the officials for each Section listed above. This is your opportunity to put the man of your choice in office to carry on the work of the organization in your Section.

— F. E. Handy, Communications Manager

ATLANTIC DIVISION

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, Harry Ginsberg, W3NY. W3BAK, E. L. Hudson, RM. W3BWT, E. W. Darne, Chief RM. W3CJS and W3CQS are new ORS. W3BYE was killed Feb. 11th — age 17. W3CWF and 13 other 1.7-mc. 'phones QSOed each other, and sent flowers. The Institute of Radio Conferees held their monthly meeting at Johns Hopkins University Feb. 16th, with 85 present. The Frederick Amateur Radio Association have gone 100% c.c. The Westminster Amateur Radio Club entertained the SCM at a recent meeting. The Washington Radio Club is enjoying fine attendance. W3DG and W3HI are awaiting an Experimental Station license. District of Columbia: W3CXL continues to lead the Section. W3BWT will be at the helm to insure 100% delivery in G.-P. Relay. W3ASO reported by radio. W3CIZ continues to report. W3CDQ is all set to help in G.P.R. W3AJL is chasing bugs out of new c.c. rig. Maryland: W3CDG leads Maryland. W3CJS made BPL. W3BXX reports for first time. W3CTD divides time between traffic and ragchewing. W3LA gets over 50% efficiency out of his 1 KW rig. W3AVD is awaiting ORS test. W3SM wants to be our 'phone OBS. W3BHE awaits op exam papers. Ed Day is now op at W3SN. Delaware. W3BAK is hitting the old stride. W3CPG is working the gang on 1.7-mc. 'phone.

Traffic: W3CXL 1546 BWT 635 CJS 240 BAK 391 CDG 387 CQS 246 SN 196 ASO 142 BXX 69 CTD 56 LA 50 ADO 49 BGI 43 CMS 26 BRS 24 BCS 21 CV 14 IL 8 ZD 7 NY 6 NR 4 WN 3.

SOUTHERN NEW JERSEY — SCM, Gedney M. Rigor, W3QL — A new radio club was formed in Wildwood with W3AYA, pres., W3BYR, vice-pres., W3BYO, secy., and W3CKW, treas. W3UT is high man this month. The South Jersey Radio Association awarded their annual trophy to W3QL. W3AYY, W3BEI and W3VX received honorable mention. W3ASG uncovered many illegal stations. W3BEI reports off-frequency stations. W3AVJ applied for ORS. W3ZI is RM in Trenton. W3APN WAC twice in two days. W3BPT and W3BCW are DXing. First report from W3ZZAW, W3BLV and

W3BTI. W3ANK is showing activity. W3BDL is in local contests. W3PC is trying 14-mc. 'phone. W3BBD finished new transmitter. C. H. Thrasher forgot his call on report card. Following are reported as active: W3CRC, AWJ, LT, ARP, KJ, ARW, AGJ, TH, CBR, AIU, OCT, CCP, BWZ, CRK, ATL, AU, ARS. The Greater Camden Radio Amateurs Ass'n meets second and fourth Tuesdays in the Y.M.C.A. W3APV reports activities in his section.

Traffic: W3UT 119 BYM 37 APN 55 BPT 18 ZZAW 14 ANK 22 AEJ 21 ACJ 2 BDL 11 BEI 20 BCW 12 PC 20 AYA 1 BUU 7 BBD 19 CEU 4 BWR 2 BYR 22 ALG 3 ATJ 6 IS 2 BAA 6 ADW-OQC-ZX 1 CLQ 5 ZX 7 GU 1 COD 34 AZZ 5 APV 12 QL 106 ASG 10 (No call given from Atlantic City 40).

EASTERN PENNSYLVANIA — SCM, Jack Wagenseller, W3GS-BF — New ORS: W3TX, W3YC, W3CHU. W3BKQ's totals continue to grow. W3AED, W3CHU and W8FJF report via radiogram. The University of Penna. is on the air with W3ABT, W3CL and W3ALX make BPL. W3BRH is to be ORS. W3GCF got telephone call from Chicago when he missed schedule with station there. W3MC is QRL YLA. W3BIS, Beckley College, Harrisburg, reports. W3OK will soon have OW QRM. W3CHL reports in person. W3NA's antenna blew down. W3BEY just missed BPL. W3BOL reports from Florida. W8FLA worked his first DX. W8EOH is rebuilding power supply. W3AKB has been QRL A.A.R.S.

Traffic: W3CFA 66 BKQ 1735 AHD 316 ABT 82 AVI 1 CJA 11 AJS 20 CHU 75 FY 28 CL 549 BRH 300 BBC 9 QP 14 BPX 32 UH 27 MC 361 BIS 125 ADE 16 BRM 3 TX 74 OK A6V CHL 325 NA 78 AXK 56 BEY 377 YC 444 CIQ 27 AAV 46 ALX 514 BZ 8 CEM 5 CRS 12 AKB 217 BF 43 AZT 8. W8FJF 176 CFF 172 AUH 32 FLA 74 EOH 107.

WESTERN NEW YORK — SCM, Don Farrell, W8DSP-GYV — W8BJO keeps eleven schedules. W8AOW is QRL ham parts business. W8DBX handled important traffic for Philippines. W8FDV keeps busy with A.A.R.S. W8BFF shows increase in traffic. W8DII has four schedules. W8CJJ is getting ready for DX contest. W8DHU recommends W8GPT for ORS. W8CPC was on 'phone 80% of the month. W8IGY is new at Hudson Falls. W8DMJ schedules W2BJA. W8HKF schedules Florida. W8AWX's OBS was copied in South America. W8AKC has new junior op. The new officers of Adirondack Radio Club: pres., W8GCU; hon. vice-pres., W8DEB; vice-pres., W8GBM; secy.-treas., W8HQT. Ex-W1BRG is now W8FSG. W8DGR is on 14, 7 and 1.7 mc. W8GAR reports someone using his call. W8HZA will be heard from Malone. W8DFN is on 3.9-mc. 'phone. W8FUE and W8DBY visited W8DFN and W8ERU. W8EEB and W8CN are using c.c. W8DEA is hack. W8BSL is operator at WPDR. W8FTN is QRL 'phone. W8DIG reports the gang around Waverly and Sayre grinding their own crystals. W8DIG secured a new three-year ticket. W8AYD has an FB 1.7-mc. 'phone. W8AJ is QRL radio school. W8EUY is working plenty of DX. W8EXG and W8FYB are active at Ripley. W8AFM is QRL plans for the big convention in June. W8QL has been grinding crystals. W8BGN is experimenting with 'phone. W8AED is off the air. W8DSS is on full swing. W8BR has a '52 in final. W8GFN is handling a little traffic. W8ADM is again on the air. W8DWJ-W4ANS says the Florida sun is QSA5 R9. W8FMF has a fine traffic total. W8AKX is hunting DX. W8JV is working DX. W8GZM is building new c.c. job. W8JE applied for ORS. W8BWT tops the traffic, making the BPL both ways. W8ACY has been doing FB DX work. W8GPS has new three year ticket. W8DES is rebuilding. W8DSP is on 3826 kc.

Traffic: W8EWT 880 BJO 839 AOW 429 DBX 366 FDY 313 BFF 150 DSS 144 DII 132 QL 57 BR 45 CJJ-DHU 38 CPC 36 DMJ 34 HKF 24 AWX 17 FMX 16 GWZ 12 GWS 11 BH 8 GWT 7 FTB 6 BLH 3 BFG-BWY-EKM 2 JE 269 FMF 117 JV 43 GZM 19 CQW 15 GWY-EBR-ERU-AZN 11 ABM-FYF 8 GPN 4 BMN 3 FFU 1 ERZ 7.

WESTERN PENNSYLVANIA — SCM, C. H. Gros-sarth, W8CUG — W8ER reports the highest total reported for ages. W8YA has been appointed Patrol Leader for the Pennsylvania Storm Patrol. W8HGG makes the BPL. W8DKL was chasing DX. W8EDG can't get a Pittsburgh schedule. W8CCD reports for W8FPD. W8EIS says, "Skip knocking skeds crazy." RM W8AJE is after portable call for Sea Scout boat. W8UCG was honored with a visit by W8GBC and W8DYL. W8FKU is rebuilding. W8VI-GN says traffic is hard on the light bill! W8BSO is on frequency. W8HPQ was on 7 mc. W8AVY is awaiting good fishing WX. W8GYH is trying to schedule Y2NP.

Traffic: W8ER 2251 YA 652 HGG 577 DKL 204 EDG 160 CUG 133 CCD 126 EIS 123 AJE-GBC 92 FKU 75 FPD 57 DYL 43 VI-GN 44 FRA 42 DLG 41 DYF 29 CMP 28 AZQ-DLV 19 ELZ 16 DRO-CFR 10 DVZ 9 AEG-HAD 4 EJK 3 FCV 2.

CENTRAL DIVISION

KENTUCKY — SCM, Carl L. Pfumm, W9OX — W9KKG leads state. RM W9BJA is active. W9BAZ gets new job selling whiskey. W9JYO and W9CIM are new ORS. RM W9BWJ bristles with activities. W9HAX is moving to Lexington. W9ERH applies for ORS. W9AUH has 1-KW job. W9EQO has Class B 'phone. W9BAN and W9DDH will take all comers at duck pins. W9LCQ, W9JUJ, W9FLU and W9JDI are new stations. W9LBX works Africa. W9CNE finds relief on 1.7 mc. W9OX takes on schedule with W9USA, World's Fair station. W9FKM's P. P. amplifier pushes instead of pulls. W9GNV is coming on 1956-ko. 'phone. W9BZS is making SS receiver.

Traffic: W9KKG 537 BJA 293 JYO 246 OX 164 BWJ 148 HAX 129 BAZ 127 AUH 113 CIM 80 CNE 75 ERH 53 EQO-BAN 40 IRU 38 AJY 23 FQJ 19 CIS 14 HCO-ELL-IXN 13 ARU 12 ETT 11 IFM 9 FBJ 7 ETD 6 JIX 4 FZV3CKH2.

INDIANA — SCM, Arthur L. Braun, W9TE—W9YB will hold a hamfest on April 8th and 9th. Registration fee will be 25 cents. Write W9YB for details. Ex-W9EBW operates under W9LPG. W9CJQ is ready to go in DX Contest. W9MM schedules HCF1Q. W9DHK is U.S.N.R. ham. W9FEI contacts a few 'phones before going to work in the morning. W9JTY moved. W9HZZ says the bull sheet is OK, but could be better. W9HIU is a "new-born father of a 10-pound son." W9FQ gets out FB with MOPA. W9EJU reports via radio. W9EEQ handles a few. W9AET is QRL work. W9EXL is on Boy Scout Net. W9CRZ has a c.c. rig ready to go. W9CKB is going strong on traffic. W9KPD is a DX man. W9JXE is new A.A.R.S. W9KZB is new ham at Roanoke. W9ABW and W9FYB are QRL. W9JNX represents Bloomington. W9AEB is building e.c. frequency meter. W9AKJ is operating from South Bend. W9EPT is recovering from his operation. W9CKY is chief-engineer at W9HUV. W9DHI reports more traffic this month. W9FUT is reduced to low power. W9JHY is on 1.7-mc. 'phone. W9HOU is teaching his new son to hold the screwdriver. W9HML wants to trade his screen door for wood and coal to keep "Ye Shack" warm. W9BZF has his hat in the ring for 0.0. W9ARR is organizing an AARS 'phone net. W9AAI and W9MQG get on for a few QSOs. W9DOD has local QRM from the family. W9IMT wants ORS. W9FIY is QRL school. W9GNY is new A.A.R.S. W9FRY blew a '10. W9IOW has o.o. on 7 mc. W9BKJ cut his power input. W9BKH says every call on 1.7 mc. is good for a QSO. W9HPQ is building a new 50-watt c.c. rig. W9RS makes an increase in traffic. W9ALD is building a new super. W9LLE uses a pair of '10s. W9GFS' c.c. rig perks FB.

Traffic: W9FUT 803 YB 168 IMT 30 HPQ 26 RS 22 TE 24 FIY 14 KHK 11 LLV 12 GFS 19 JSM 10 HSF 8 AUT 9 HTP-KPN 8 JOQ 5 JRR 6 JNH 3 GGJ 5 BKH 4 DJJ 6 BKJ-IOW-FRY 14 GNY 22 HML 15XG 4 ??? 12 JHY 58 KDD 3 DHJ 68 HUV 4 CKG 1 AXP 9 AIP 3 DJJ 4 CKB 31 CRZ 61 EXL 37 FQ 70 EUJ 73 EEO 14.

ILLINOIS — SCM, F. J. Hinds, W9APY-WR — RM N W Section W9ERT. RM NE Section W9DDE. RM of Illinois Nets W9CRT. W9JUC works 7-mc. DX. W9FRA is one of World's Fair ops at W9USA. W9IVF works breakin.

W9IYA plans new receiver. W9KEH rebuilt. Are you going to banquet at Purdue University, LaFayette, Ind., April 8th and 9th? W9JZY will help W9CRT with State Net. W9CIA blew '04A. Weather poor at W9ENH. W9LNV is new reporter. W9ICP has 228 mills in antenna. W9OQ has new SS. W9ALE has come to 3.5 mc. W9LBL says a.c. notes on increase. W9AFN reports excellent DX and traffic. All OK at W9GJJ. W9AVB likes ORS contests. W9IBC is rebuilding. W9FXE has a pair of '66s. W9IWW is giving code practice. W9RT has a Comet Pro. W9BTT is NCS. 2nd District, Ill. A.A.R.S. W9HOS is building 1.7-mc. 'phone. W9LNI wishes raw a.c. fellows would get stabbed with the Rettysmith. W9DBO wants to be A.A.R.S. W9LGT wants a 500-cycle crystal! W9DYG has new QSL cards. W9ARN was heard in N.Z. W9FXZ worked a PA. W9FHR works TI and VE5. W9KOQ gets crystal p.d.c. reports Left-hand operator at W9LOS. W9IZP is moving to 7 mc. W9ATS gets out well. W9CZL blew a '66. W9HKC blew his '10. W9DOU is QRL A.A.R.S. W9CHH consolidated with W9JSL.

Traffic: W9VS 1304 ENH 806 FRA 512 BTT 387 DOU 367 IVF 337 FCW 258 IYA 247 CGV 219 JZY 147 CIA 136 IEP 133 EWN 126 DBO 116 HKC 111 CRT 87 DYG 61 ALA 60 AMO 53 DDE-FO 52 JUC 51 KJA 41 ALE-APY-CZL 35 IZP 34 AFN 31 HOS 28 FXE-HSG 27 KEH 26 ACE 22 HUX 20 AND-ILG-IWZ 19 AVB 18 ERU-JKW-17 CUH-HUU 16 CNO 14 BYL-GIZ-KA 12 KHD 12 BPU-EMN-JKJ-JSL 11 PGD-JLK 10 FGJ 9 SG 8 FGN-DZU-HPK-PK 7 BRX-DCI-GDI 6 AFB-BSR-BVZ-FTX-LBK-ICN 5 DJG-IYP 4 CEO-HQH-IUF 3 HYA-R 2 BIN 1.

WISCONSIN — SCM, Harold H. Kurth, W9FSS — District No. 1: W9GVL is using low power. W9FSS had visits from W9KXA and W9KQB. W9EYX is QRMing the YLs. W9AFW is building rack-panel for 56 mc. W9JBI worked a Mexican. W9KWV's neighbors out his aerial. W9LRB is an addition in Milw. District No. 2: W9HGG leads Section in traffic. W9HTZ got 150 points in ORS Party. W9EEQ handled QRR from Minn. to Ind. W9AMB-PAT is going after traffic. W9AER is coming to life. W9IQQ will have '52 a.c. soon. W9AKT is rebuilding. W9DGV has new e.c. transmitter. W9AVG reported direct to HQs. District No. 3: W9AUX made BPL. W9JDP sends nice total. W9HMS has new receiver. W9DXV blew pet '10! W9BKR blew power supply. W9DKH is QRL state. W9HNX is getting good schedules. W9DJA is rebuilding. W9IHG is laying for DX. W9FXH will soon be QRMing VKs. W9JVD has new power supply. W9GVF is back from Calif. W9GEG finds DX good. W9KTK is trying hand at traffic. W9BJF is 56-mc. pioneer. W9HTN is hibernating. W9ERZ is member of Fond Du Lac Club. W9CCI is pushing a swell sig. W9FAV is blamed for DX fever in Fondy. District No. 4: W9HSK leads this district. W9FAA woke up with good total. W9AON has neat schedule list. W9FHX is back. W9FDI is experimenting. W9KGY is on 1.7-mc. 'phone. W9KJR was off for two weeks. W9GPF has five schedules. W9ZY is active. W9EWY made an e.c. transmitter. W9JNU is awaiting new stuff to rebuild. W9DRO is about ready to get ORS. W9HDP is building low-power 'phone. W9IFV spent time on 14 mc. W9KNS is on 7 mc. W9IHB is on 14 mc. W9AVM is c.c. 7 mc.

Traffic: W9HGG 718 AUW 604 GVL 382 HSK 181 JDP 155 FAA 128 AON 128 FFX 126 KJR 102 GPQ 93 ZY 62 HMS 53 EWY 50 DXV 52 JNU 45 EEQ-DIT 40 FSS 29 AMB-DRO 28 IQW-HDP 25 IFV-FAV 23 JCH 21 IYL 19 JCW 16 KQY-GFC 15 FDI 30 EHD-HA 14 HFA-DNU 11 RH 18 FTH 12 ISD-ASQ 10 GWK 63 HTZ 49 ESZ 9 EXH 3 VD 7 ESE 5 HYM 3 FAY 2 IH-EAR 1 AZN 4 KLL-BQM 9 EYX 7 ATO 6 HKL 2 GQW 1 AVG 64.

OHIO — SCM, Harry A. Tummonds, W8BAH — W8DDS Chief RM. District No. 8: W8BKE reports new station. W8IBN is on now. W8ALQ is finishing schedules. Lt. H. F. Breckel reports for W8NC. RM W8CGS reports via radio. W8CUL continues nice report. W8DXR-W8IFK sends letter. District No. 7: ORS renewed at W8EQB. RM W8VP schedules W8FGV. District No. 6: W8AEL is waiting for new license. W8GFA changed QRA. W8HEY says W8IHJ and W8IGO are active. W2ZZGA is back again. W8GZ reports. RM W8BBH will be glad to hear from hams interested in ORS work. Station reports from Osborn, but no call given (?). W8DPR is new OBS. District No. 5

Buckeye Short Wave Radio Assn. officers: W8BSR, pres.; W8FGV, vice-pres.; W8FGA, treas.; W8DKG, secy. W8BSR and W8HCP report School and orchestra QRM W8BMK. W8DFR has pair 100-watt tubes. W8FGV, RM, leads the state. District No. 4: New a.o. receiver at W8ERA. W8DTW reports by radio. Hello, W8QC. Chess by radio with W8DIH, reports W8WE. W8UW is A.A.R.S. NCS. W8PO reports nice total for his portable W8HSG. RM W8EEQ leads his district. District No. 3: New officers Norwalk Radio Assn.: W8DBV, pres.; W8HLO, vice-pres.; W8DIH, secy.; W8HCR, treas. W8ESN reports for Maumee Valley Radio Assn. District No. 2: RM W8BKM. Ex-W8AQY returns as W8DUO. W8EEZ is real active station. Hamfest at Youngstown Radio Club, Feb. 25th. This gang publish a real bulletin. Write for a copy. W8CNC reports for W8ERY, EJ, DIA, CIT, GCY, AAG, AHW, PH, ZZA. W8BKM, RM, reports by radio. District No. 1: Reports received from W8IHQ, CQF, FVK, EEW, HVX, CEJ, BKV, FFM, Chief RM, W8DDS, and W8BAH make the BPL RM W8DVT, is NCS A.A.R.S. Central Y.M.C.A. crashes through FB report via W8FF. W8EBY is QRL A.A.R.S. W8DTF is rebuilding. Nice total at W8AOJ. W8TH is going to 1.7-mc. 'phone. W8RN is going again. W8GKG schedules W8CIA, DYL and W9ATH. W8GDQ operates 1.7-mc. 'phone. 14 mo. used by W8HGW for BY traffic report. W8GQU was reelected president Heights Amateur Radio Club. W8FFK attended Lakewood Hamfest.

Traffic: W8FGV 492 DDS 433 BAH 419 DVL 407 EEQ 367 BBH 355 PO 263 FV 188 GQ 131 BKM 108 VP 90 CUL 87 CGS 86 UV 79 EBY 60 EQB 58 NC 56 ALQ 52 DIH 47 WE 41 DTF 35 DFR 32 HEY-EEZ-AOJ 30 QC 27 TH 22 RN 21 DTW 20 GKG 19 GDQ 18 HGW 16 BMK-GQU 15 FFK 14 ERA 13 HXC 6 CMY 12 ACZ 10 HYZ-GVL-EQI-FUX 9 HPW-BNC-EMV 5 VR-EPP-IET-GES-BAC 7 DKG-AFU-GSO-DAT 6 GLI-CGO-FRV 5 HGE-HVV-BKC-AND 4 CXF-FSK-777-UC-DVI 3 CKX-EFW-UX-FGC-ZZB-HRI 2 FGP 10 GDC-BYD 1 HCP 26 HSG 13. W2ZZGA 61.

MICHIGAN — SCM, Kenneth F. Conroy, W8DYH — Many thanks, gang, for again electing me SCM. W8DVC applies for ORS. W8PP keeps things going. W8FUQ has something up for 56 mc. W9BBP says W9FSK has a new YL. W8DWB is after 'em. W8EEF is QYL. W8FWT is traffic-ing. W8ARR still perks. W8AXZ wants help in QSOing NX1XL. W8HKT says W8FIO is now at Woodman Sanitarium, Room 216, Woodman, Colo. W8CEU keeps well occupied! W8FX is advertising to trade his station and prestige for a diamond! W8NQ is cutting jig-saw puzzles! W8IN moved into the W8DZC-CEU-FTV-FTW mess! W8IDB bought W8GBB's bug. W9IIX has a YL in his life. W8HL sports Jan. QST's e.o. freq-meter-monitor. W8HBZ QRSchool! W8GRB and W8BCC are new reporters. W8GUC schedules 'em! W8GRN wants W8BMG to know that his pet hair-tonic grew hair on his bald-headed fly! A two-amp. charger put W8FXB off the air! W8EHD is climbing again. W8FRW sends code practice 5 to 6 p.m. daily, 3808 kc. W8DZ makes BPL. W9DSJ says W9DQT is FB on schedules. W8DFE writes report in red to show they're HOT! W8DED is gonna give us a QSL prize for the DARA Hamfest, March 26th, at Ypsil. W8DA spills: "A certain RM, whose middle name is Candler System, is visiting a dancing master regularly." W8CPY puts W8QT out of the competition by introducing him to Theresa! W8CST sold c.e. job to W8IIA. W8COW works A.A.R.S. W8BTK ground a 7-mc. crystal. W8BMZ is emerging from troubled waters! W8BEH is crystalizing. W8AYO claims record for overloading '47 . . . 950 or 1000 volts! W8BIK and W8FRW hear one another real well! W8BGY uses e.c. oscillator. W8BDH goes "nerts on tlc." W8BXJ's "faded summer loves" are in full bloom. See the DARA Traffic Bulletin for more dope on Michigan. A report by letter or card to SCM, W8DYH, on 16th of each month brings you a copy free. Don't forget the big Ontario Convention! We don't know the results of the first inning of the Ontario DARA traffic contest yet, but CU with DARA Bulletin.

Traffic: W8PP 811 CEU 657 DFE 603 DZ 582 FX 439 CST 406 DA 307 GUC 264 AEQ 222 AY0 169 QT 155 EHD 134 CPY 118 HUD 84 DCT 82 IDB 79 FTW 76

DYH 73 FRW 69 DVC 64 BHH 62 GBB 61 GPH 60 BBX 43 GO 41 DED-BCC 40 DLX 39 BMZ 37 CFM-BIK 32 RTK 30 HBZ. 29 FWT-FAV-BDH 28 ICX-COW 25 AW-ARR 23 CUP 22 HXT-HOT-EGE-BGY 21 HL-GRN-BXJ 19 NR-DWB 18 HFU-HFQ-EDO-DUR 17 WR 16 HQB 15 EGI-ECG-CUX 14 BJT-GDR 13 JO-HPH-GQS 12 FEE 11 HZO-GSP-GQB 10 FDX 11 GUN 9 HSH-DSQ 8 UD-RJ-HZN-DSF-AKN-AJL 6 FGX 5 IFL-HAN-GWA-FRE-EEH 4 KJ-IFE-FQD-DHC 3 QM-JX-HLC-HA-GOG-GMB-DBS 2 BIU-EVJ-ETP-CTD-GQQ 1 DMR 2 EVC 366 BMG 185 FTV 75 GTN 6. W9HK 259 HXB 64 DSJ-DQT 34 BBP 27 FSK 23 GQF 16 IJH 14 DCN 10 EQV 8 EXT 6 EEM 5 CSI 4 HSQ-CWR 2 KPW-GJX-EGF-CJP-AAM 1 CE 78 DAB 29 IHM 4.

DAKOTA DIVISION

SOUTHERN MINNESOTA — SCM, Norman Berk, W9EPJ-CGR-EMQ — CRM, W9BKK, RM, W9LNL. Wow! Seven in BPL this month — W9EPJ, W9BKK, W9BN, W9LNL, W9JID, W9BKX and W9CSY. W9AIR almost made BPL. W9BHZ reports via radio. W9ELW applies for ORS. W9BNN went to Soo City for exam. W9FCS plans new receiver. W9AQQ turns in a monster report. W9YC promises big traffic totals. W9IXQ promises to be good next SMRA meeting. W9GLE sends nice report. W9DH knocks 'em off. W9JFH reports "No Funds." W9KHY is new reporter. W9JLV won 510 at Mpls. Radio Club meeting. W9GCN wants more traffic. W9GNU new ORS. W9GFA is going e.c. W9DWU is recovering from auto accident. W9LDQ is building dynamo. W9IRT and W9FJI are heading for 14 mc. W9EEB has a twin longer bike. W9FLE is using two '50s. Yoleg.

Traffic: W9EPJ 1196 BKK 1041 BN 1036 LN 1016 JID 740 BKX 525 CSY 505 AIR 325 BHZ 313 ELW 260 BNN 227 FGS 170 AQG 148 YC 107 LKQ 106 GLE 101 DH 76 JFH 70 KHY 68 JLV 59 GCN 47 GNU 46 JBA 37 HCW-DCM 30 CSU 22 KKM 18 JMV 16 FNK-CPP 12 DHP 11 KMG 8 CSJ-IDF-DGE 6 LS 5 HZU-EFD-EGG 4 FMA 2 KDI-DMA-GUX 1 IAE 10.

NORTH DAKOTA — SCM, Wm. A. Langer, W9DGS-IFW — W9HJC's traffic total increases monthly. W9DPT is building transmitter with e.c. oscillator. W9IK works both coasts on 1.7-mc. 'phone. W9GXA put a battery and spark-coil powered rig on the air during recent blizzard. W9EVQ won crystal in Consistent DX QSOs contest. W9KZL sends first report. The SCM has the rebuilding bug. W9FIV has regular ticket.

Traffic: W9DGS 813 HJC 406 DPT 189 IGR 84 IK 55 FSF 54 PIV 50 DYA 29 JZJ 26 EGI 18 DM 12 EMY 11 BTJ-JAR 7 JAS 2.

SOUTH DAKOTA — Carrol B. Miller, W9DKL-GIO — District No. 1, RM W9DGR. W9DKL regains traffic lead. W9BJV is close second. W9GLEK is in Bowdle. W9CAU uses pair of '03s. W9DEKJ wants 'phone permit. W9TY is back on the air. W9CFU and W9GYG are working 56 mc. W9IQD has new frequency meter. W9BAE uses a '10. W9HBA is knocking down FB DX. W9GPB and W9KQP are rebuilding. W9LDU has an FB 'phone. District No. 2, RM W9IQZ. W9AZR comes through with FB total. W9EUI is on 7 mc. W9LDW is awaiting license renewal. W9BLZ is in Rochester, Minn. W9FKL is awaiting opr. ticket.

Traffic: W9DKL 600 BJV 501 AZR 437 DGR 175 IQZ 119 IDW 109 CAU 104 FKL 57 FOQ 55 IEK 24 ALO 30 CRY 15 JLA 2 FLO 3 HSY 1 DB 9.

NORTHERN MINNESOTA — SCM, Palmer Andersen, W9DOQ — W9JIE is traffic leader. W9HDN is getting new 50-watt. W9HZ is active. W9IPN is going to assist the RM. W9FNQ is keeping schedules. W9GWR built frequency monitor. W9IPA has 700 volts on a '10. W9IGA is working country on '71A. W9HED has trouble with e.c. rig. W9IAA took operator's exam. W9BRA reports for Paynesville gang. W9EHI and W9CDV are on 56 mc. W9BAR is after DX. W9JLJ says "Hamming" is great fun. W9FTJ went to St. Paul to take exam. W9EGU is experimenting. W9KKL is new ham. W9BHH is thinking of new super. W9FNJ has great luck with '46 oscillator.

Let's hear from you, gang, on how to conduct a traffic contest.

Traffic: W9FNQ 46 IPA 12 BRA 45 HAD 32 IDN-IFQ 7 1GD 11 HZ 170 JIE 235 CTW-BCT 6 HDN 10 IPN 12 DJW 5 BAR 15 BBL 6 JLL 18 KKQ 5 KJT 3 BHH 15 HIE-HZV-GRH 6 ISA 2 LAY 8.

DELTA DIVISION

TENNESSEE—SCM, F. F. Purdy, W4AFM—W4HA leads the traffic ranks. W4AFM is a close second. W4AFI has extra first ticket. W4FK changed QRA. W4ABY is RMic, U.S.N.R. W4AMW is proud papa of a Jr. op. W4ALM is QRL college. W4AGW has his troubles. W4BBT will soon be ORS. W4ACU is visiting in Nashville. W4AYV is new A.A.R.S. W4BOZ is going to make the BPL or bust! W4IB is active on 14 mc. W4OI is reported in love. W4EX is using high efficiency rig. W4RO made a trip to Florida. W4AEP received a new call, W4BRP, for the West Tenn. Teachers College. W4AAD's favorite records are "Babys Parade" and "Commin' 'Round the Mountain." W4FR rings up plenty of DX.

Traffic: W4HA 579 AFM 501 AAO 220 BOZ 166 EX 83 BBT 54 FR 48 RO 46 BQK 24 OY 18 MU-ARP 15 LU-ATE 10 BGQ 7 BIZ-ABX 6 ZZ 5 ADX 2.

LOUISIANA—SCM, W. J. Wilkinson, Jr., W5WF—W5BLQ will be on with 300 watts c.c. W5CUL is a new ham. W5CMQ is completing PP TNT. W5COG, COR and CKC are giving up the ship. W5AQC's OW is interested in ham radio. W5CDQ is pounding at W5AQY. W5AXD sends dope on his rig. W5HR reports traffic. W5KC has new ticket. W5BYX handles traffic. W5BYY will have MOPA on 7 mc. W5AYZ wants traffic. The OW at W5FR has her ticket. W5AGM is in Shreveport. W5CEN is DXing. W5BFB is pounding away. W5KE is in N.O. W5CW is going to sell out. W5RR is O.O. Write the RM, W5BZR, Minden, for schedules. W5BMM and W5CEW are on 14 mc.

Traffic: W5APA 1 BYQ 4 AXU 6 AKT 10 AYZ 17 WG 13 BPL 1 HR 15 BYX 43 KC 22 BZR 81 BBW 3 HYY 22 BS 12 WF 62.

ARKANSAS—SCM, Henry E. Velte, W5ABI—W5BMI just can't be held down! W5AAJ reports by radio. W5LQ is on in full swing. W5BED is now in northwestern part of state. W5BDB is building 'phone. W5ABI is newly married! Send all future reports to 2918 West 15th St., Little Rock.

Traffic: W5BMI 1357 AAJ 201 ZB 67 IQ 388 AHS 6 HDW 3 BSL 32 BRI 5 ABI 221.

MISSISSIPPI—SCM, William G. Bodker, W5AZV—W5VJ and W5AZV have new receivers per Jan. QST. W5ANI is champion crystal-buster. W5BTL is awaiting license renewal. W5CLD keeps four schedules. W5BUP is about ready to take off with 3.9-mc. 'phone. W5BZG is practicing code. W5APP is slamming 1500 volts at 200 mills on a 50-watter. W5BQX is proud papa of a Comet Pro-.

Traffic: W5CLD 132 BUI 51 ANX 22.

HUDSON DIVISION

EASTERN NEW YORK—SCM, R. E. Haight, W2LU—The prize donated by W2BW was won by W2BJA. W2BC scored a close second. W2BZZ and W2UL make BPL. W2ENC is new OBS replacing W2OP. W2CL reports ten off-frequency. W2ANV received promotion in VCR. W2BVR assisted in search for lost aviator. W2ATM is new ORS. W2DVY is on all bands. W2BLL has new rig. W2SZ sports new inhaler. W2ENG is c.c. W2ERR leaves R.P.I. The 'phone bug is biting W2DRC. W2CBN and W2CGO changed QRA. New officers Mid-Hudson Radio Club: pres., W2BJX; 1st vice-pres., W2CGT; 2nd vice-pres., and treas., Archie Smith; secy., W2DWO. W2ENR is active on 3540 kc. W2BSH is assistant to our new Director. W2DEL tries r.f. on receiver. W2DMH signs with VCR. W2CJP is heard with c.c. W2AMM, W2CAZ and W2EFM are heard on 'phone.

Traffic: W2BJA 811 BC 721 BZZ 593 UL 519 LU 351

KNC 182 ANV 174 BVR 84 ATM 77 DVY 64 BLL 49 DDW 41 QY 29 ENB 17 KW 12 CJS 10 EGF 8 CFU 6 ENY 4 DVF-DTB 2 DIJ 1.

NORTHERN NEW JERSEY—SCM, Walter A. Cobb, W2CO—W2DIU is high man as usual. He also made BPL with his portable W2DLZ. New ORS: W2JC, W2DIU and W2EJK. Candidates for appointment: W2DUJ, W2ELJ, W2BWZ and W2EKM. W2CZP and W2BZB requested OBS. W2CVY returns to the air. W2EOH is annoyed by R.F. on the filament. W2DFB-EML says DX FB on 1.7-mc. 'phone. Neptune High School organized a radio club. W2AZW forgot to renew ops license. The Raritan Valley-Union County Joint Hamfest Committee promise a peach of a time on March 20th. W2RQ and W2CZP are on 56 mc. W2TP and W2JN are accountable for activity on 28 mc. W2AUQ has gone to sea. W2AMR complains of local QRM. W2BCG keeps messages rolling in and out. W2CWK has "jined up" with the soldiers. W2CGG schedules W8DIL. W2EIP handles beaucoup local traffic. W2CJX has maintained consistent QSO with a friend on a ship making regular trips to South Africa. 2CTQ is back with call W2NQ. W2BXM is on 28 mc. W2DQO is QRL studies at Rutgers. W2CHH likes to chew the fat with West Coast. W2BPG hopes to QSO Asia for WAC. W2BPV suffers from YL-itis. W2BAP pulls in DX on 14 mc. W2ETJ has opened shop in Englewood. W2EHN experiments with low-power and antennas. W2ADP finds 14 mc. interesting. The Passaic County Club is showing signs of life. W2CEC has a double frequency crystal. 50 watts do wonders for W2BTT on 7 mc. W2CNW worked his first W5. W2DNX graduated from grammar school. W2BEN is trying to get his crystal to oscillate. West Paterson produces a new ham, W2EMY. Pounding brass is W2EEC's idea of indoor sport. W2DOV is in the market for a 211E. Thanks to W2BTT, W2ETQ boasts a new receiver. W2EKM held Naval Reserve drill with bunch of 1's. W2AUC is back on 7 mc. W2ERV is new member of OCRA. W2FR has trouble with power supply. W2EFQ built a new portable receiver. W2EDV decided to try 1.7-mc. 'phone. W2AFC has a patent tone control on his CW transmitter. W2BQV has been busy on 56 mc. The Ocean County Radio Assn. will hereafter meet the first Monday of the month. W2ABT will soon be ORS. W2CNV is grinding crystals. W2DOU uses 1.7-mc. 'phone. W2DSV gets good results from pair of 10s. W2ETA is "blanked" by transmission of W2CIN. W2DNP found (?) a 350-watt bottle. W2ABX grows gray hairs over c.c. W2CSE grows fainful when DX is mentioned. W2BKO should supply information about the "man in the woodshead!" What happened to Dad (W2DAD) and the kids? W2ENU modulates the BCL neighbors. Good DX at W2DNR. W2EII tries to contact Mars. W2BDG is looking for 14-mc. DX. Jersey City has a new ham, W2CST. Has W2ON had any more motorcycles lately? W2EQS has his share of transmitter trouble. W2DMU is engaged in a big business deal. W2CFW, W2CGC and W2ECO swear that 14 mc. is far from dead. A bum power transformer at W2EJK. W2ALD is looking for material for U. S. N. R. W2DUJ joined League. Bloomfield Radio Club has a traffic contest in progress with W2AIP in lead. A Boiled Owl Party was held Feb. 21st with W2EOC as master of ceremonies and W2FB, W3BPP, W3LD, W2FL, W2AIP, W2VQ, W2CO and Ole Larsen as participants.

Traffic: W2DIU 1687 CWK 209 JC 77 AMR 59 CGG 52 CJX 38 EJK 30 TP 29 DPB 23 DV 18 BPY 17 EIC 14 CIZ 9 CIM 2 DLZ 505 EKM 136 BWZ 109 BCG 80 BIP 49 ABT 46 FR 43 ALD 35 BQV 33 DUJ 30 BXM 29 DRV 24 CO 21 AEY 15 DYR 12 DZM-AEB 8 PSX-BYJ-DZW 6 CEQ-DQR 4 FL 3 BYM-AEB 2 AWR 1.

NEW YORK CITY AND LONG ISLAND—Acting SCM, E. L. Baunach, W2AZV—W2BGO schedules FM8IH on 3540 kc. W2PFF is selling out. W2DBQ is keeping regular schedules. W2DQK's c.c. job perks FB. W2DUP's teacher's name is Miss A. C. Hartley. W2BSK is on 3.9-mc. 'phone. W2HJ says copying long wave commercials is FB. W2CLH is out for traffic. W2CYX has

c.c. rig perking. W2CBB sends his largest report. W2WP had 100 deliveries. W2ASG changed receiver. W2AHO taught a fellow at school the code, and he is now W2EQX. W2CHK built seven rigs in one month. W2LE tried to put a stage of TRF on his receiver. Traffic and rag chewing run fifty-fifty at W2QM. W2AZV is working on the Hudson Division Convention. W2BQG says DX FB. W2DRG put new tubes in receiver. W2DQW runs his schedules 99.99%. W2BPJ is trying 56 mc. W2EGA is heard with MOPA. W2CEH improves his transmitter while W2DBE does the experimenting. W2BRB wrote his report enroute on the R.R. W2CYA enjoys visiting BC stations. At recent elections at the Manhattan Radio Club W2CWP was elected president, W2DQJ vice-pres., W2EOG secy. and treas. They meet every Friday at 8:00 p. m. at 503 W. 145th St., N. Y. C. W2EVA is new ham in Queens. W2BVL operates during evening. W2LG is not on much. W2BNL is on 56 mc. W2DUE tried 1.7 mc. W2DYJ is going for 56 mc. W2EQK hails from Park Ave.

Traffic: W2CBB 533 WP 350 DBQ 296 CHK 126 AZV 117 AHO 106 BGO-DQW 79 BPJ 49 DQK 46 QM 42 DUP 38 LB 35 PF 34 BVL 30 DYJ 25 ASG 22 CYX-DUE 20 DRG-EAR 18 BAS 17 CRL-CCD 15 AOD 11 ELK 9 DXL 7 AWT-AGL 6 COO-DJO-EAF 5 BMH-AAK-HY 2 DOG-CLM-FF-BEG-EVY-TI-RZ-CUD 1.

MIDWEST DIVISION

KANSAS—SCM, O. J. Spetter, W9FLG—RMs: W9KG, E. Crockett, Jr.; W9CFN, C. G. Train. W9KG retains traffic banner for next three months. W9CFN reports QRL. W9DEB put over a state dispatch for the American Legion Feb. 12th. W9IDB and W9KXM are new stations. W9GBP leads the state in traffic. W9CYV enjoyed visit with W8BTN. W9FRC put in P.P. '46s. W9IOL reports for Winfield Radio Club. He and Anson Carr, ex-5PU-9EFJ-9CNL, have consolidated. W9BWP will soon be on with c.c. W9AKG is operating a skating rink in Ark. City. W9AWP reports Wichita Club activity. W9EMB handled traffic from the electrical exposition at K. G. and E. W9GWO is having less transmitter trouble. W9DEL is returning to the fold. W9DMF uses '45s in parallel. W9DWO is trying to get the '45s to kick a fifty. W9ABJ hlew some '81s. W9BCY attended meetings of the WARC. W9KTG is using '10s P.P. Ex-W9AYE gave a talk on Television at WARC. W5AKX has returned to Oklahoma City. W9DSD blew high voltage transformer. The Loether brothers of W9EAQ have returned to Fredonia. An official emblem has been adopted by WARC from a drawing by W9GAY. W9CET is trying 14-mc. meter 'phone. KVRG is preparing for the big convention this fall. Save your pennies!

Traffic: W9GBP 565 FLG 396 FRC 248 AWP 200 ICV 164 DID 128 HSN 127 EFE 123 IOL 112 CKV 106 KCR 78 COA 63 KDO 56 DEB 54 BTG 43 NI-RWP 36 KTG 32 GFN 28 BEZ 26 LFN-GBA 25 BYM 24 ESL 22 LMB 21 JVC 20 BUY 19 EYY 15 AWR 12 BYV-CVN-PB 11 IQV 10 HWW 9 FET 7 BGL-IQI-AWR 6 CYV 5 IPD 4 GRC 1 CPY 2 KFQ 113 GCL 20 CUF 56.

NEBRASKA—SCM, S. C. Wallace, W9FAM—W9BNT cops the lead this month. W9FUW is still the "Champ 'Phoner." W9DHA says, "Message file not big enough, couldn't handle any more." W9HYR is working hard for Lincoln. W9DMY and W9IFE send good reports. W9EWO quit work account of eye trouble. W9FAM is back after break-down. W9EEW doesn't say much. W9HTU is going hot. W9BB lands in BPL. W9FGS is awaiting ticket renewal. W9DHC wired his report via W. U. W9HGO is going on high. W9FWW is building new transmitter.

Traffic: W9BNT 2139 FUW 1068 DHA 617 HYR 543 DMY 269 EWO 236 FAM 187 ERW 118 DFF 41 DI 9 DGL 2 ISJ 35 HTU 553 HB 551 FGS 208 IFE 213 DHC 201 HGO 191 AFD 175 IFZ 10 DCC, 161 KQK 66 KPA 51 JLP 21 CWM 17 DEP 5.

IOWA—SCM, Geo. D. Hansen, W9FFD—W9EIV and W9BPG, RMs. W9ACI leads this time. W9FFD is a close second. W9CWG is on early morning hours. W9ABE awaits the World's Fair. W9DLS works the portable. W9GP reports that the Iowa Convention was voted for Des Moines. W9EIV is busy playing with new Jr. Opr. W9FO

reports a new club in I.C. W9DUN and W9FZO have c.c. outfits perking. W9HPA has good schedules. W9DNZ reports new 30W MOPA. W9FYC is active A.A.R.S. W9CYL has 56-mc. outfit. W9BPG is joining A.A.R.S. W9BWF's Autodyne receiver is perking FB. W9FEA is having antennae trouble. W9DEA is on 7 mc. W9DFZ is plugging the ether with the '52. W9JZM reports a few. W9DTI is re-building three-phase job. W9LBF has no time for schedules. W9JMX is a first reporter. W9KCS claims he is the first licensed enhancer! W9GFL says 56 mc. not so hot.

Traffic: W9ACL 278 FFD 255 CWG 147 ABE 132 DLS 117 GP 109 EIV 86 10 80 DUN 71 HPA 68 DNZ 59 FYC 57 CYL 56 BPG 49 BWF 44 FEA 41 DEA 36 FZO 31 DFZ-JZM 29 JZC 28 JSO-IFI 26 FYX-DMX 22 EOE 18 FQG 15 FEB 11 ERY 10 JMB-BFL-DUE 8 EMS 6 JAD-CS-CFZ-AHX-AFQ 5 GWT 4 FFX 3 HMM-KSK 38.

MISSOURI—SCM, C. R. Cannady, W9EYG—W9BMA and W9FTA, RMs. W9BMA leads the Section with W9FJV the usual second. W9CJR remained the leader for the year's standing in ACTIVITY CUP RACE. W9CCZ is using 7 and 3.5 mc. W9LNL and W9KEF use 1.69 mc. W9HVN has 50-watt c.c. rig. W9GUQ, W9CLT, and W9IJZ are 1.69-mc. 'phone. W9ILI is QRL. W9BAF is trying 3.9-mc. 'phone. W9FAB is putting extra first into use. W5BOR is now in St. Louis. W9KIR likes 7 mc. W9EFC reports good DX. W9KFL boasts one of heat sags in St. Louis. W9EN has c.c. 50-watter. W9LKQ is new St. Louis ham. W9API is on 7 and 14 mc. W9FTA reports ham-fest on Feb. 11th with 72 in attendance. New club, "Mound City Radio Amateurs," has been organized. W9AC applies for ORS. W9EIV reports new receivers being built. W9DUD reports the St. Louis Amateur Radio Club has new shack. W9GDU reports for W9ANC. W9HWE reports autodynes receiver FB. W9BMA hlew bunch of equipment. W9FHV is QRL sickness. W9HON is doing FB with schedules. W9EQC is DXing. W9LBB handles traffic on 14 mc. W9HFO changed to night shift. W9AUC is QRL school. W9CVZ is added to K.C. WACs. W9GSF promises better total. W9CU is back to sea. W9IMZ moved to Cleveland. W9DEA goes back to the BCL. W9FCF is on 1.69-mc. 'phone. Good reports from W9RL, W9CFL and W9NP. W9DIC continues reporting. W9DLC adds DX on 7 mc. W9HVV schedules W9ZZCA. W9DCB reports no luck on c.c. oscillator. W9HNM is moving. W9ALJ continues FB traffic. W9CRM is QRL railroad. W9JBV is trying 7 mc. W9FSL has bugs out of c.c. rig. W9ECE and W9FYU have AA traffic totals. W9JVL holds five schedules. W9ENF has new self-contained frequency meter monitor. W9BGS continues to increase traffic. W9HVV (says W9IYU) has a pup named "CQ"! W9IGX reports first traffic. W9KNH is studying for exam. W9HBJ is in had with OW since hams threw cigarette stubs on floor. W9KEM is getting FB DX. New officers of the Hannibal Amateur Radio Club: W9GBC, pres.; W9IRR, vice-pres., and W9FGJ, sec. W9LXO gets FB DX from his '12A. W9HUG is holding c.c. oscillator. W9EYG expects to be back in Monett on about April 1st. The Fourth Annual Club meeting will be held at Monett on March 26th.

Traffic: W9DHN 2 HIW 8 FYW 3 FSL 108 DUD 13 EWT 4 HUZ 3 FTA 42 EL 1 GSF 9 EYG 16 HCP 12 JPT 8 API 2 EHS 8 AOU 2 HWV 42 BHF 2 FYU 37 CJR 266 HUG 30 JEP-KFX 2 BWX 3 JBV 24 CRM 23 AJ 187 KIV 2 HWV 42 FEH 3 LLJ 2 HNM 80 KIO 2 LCJ 4 IJO 52 DLO 36 ECE 68 GMI 4 IOS-GLY 8 EFC 128 FJV 376 HWE 21 JAP 6 KLF-FYM-FIZ 4 IYU 45 IGX 16 DUM 7 BGE 5 KJK 1 FZJ 4 BGS 10 ENF 80 JVL 50 GDU 17 GTK-ENK 2 KIK 1 BMA 612 FHV 209 HON 93 EQC 92 LBB 44 HFO 32 AUC 22 FNO 8 JWI 4 AOG 2 IWW 1 GBC 43 CJH 26 RR 31 NP 227 CFL 32 ZZ 5 FUM 6 EKY 8 ANJ 1 EME 28 HUI 24 AWE-BIU 1 HLK 2 COZ 8 DOE 10 BLR-LCJ 4 GBR 8 BC 10 GBJ 50 HOW 1 FAL 7.

NEW ENGLAND DIVISION

VERMONT—SCM, Roy L. Gale, W1BBD—W1ATF leads in traffic. W1BJP is c.c. on 1764 kc. W1DHX tied the SCM on traffic. W1CGX has returned from the hospital. W1ERV visited W1BZD. W1BMS listens to the gang from his home in New York. W1BDX is selling out. W1FN

W1AAK, and W1DUL visited the SCM. W1AHN is rebuilding.

Traffic: W1ATF 204 BJP 72 RZD 54 DHX-BD 41 CBW 33 BAS 9 ERJ 8 BCK 2.

MAINE—SCM, J. W. Singleton, W1CDX—The SCM leads this month. W1BOF handled 4319 messages in last twenty months. W1ATO is QRL USNR. W1EF is building new outfit. W1DHH plays checkers with W1DRZ via 1750-ke. 'phone. W1APR and W1DKO are in together. W1BNC and W1CHF are new ORS. W1CIP and W1CFG now have jobs. W1AQW has YL QRM. W1DRZ reports. W1APX wants schedule with Aroostook. W1CRP will be at it again soon. W1FOW is a new ham. W1AQL and W1QH have been on 7 mc. W1VIF has scheduled W1BNL for three years. W1BLI donated a dandy "xtal" for prize in the Mains traffic contest. W1EEY has moved to Hartford, Conn. The Kennebunk gang will hold its next hamfest Saturday, April 15th. Plenty of Fun, Food and Laughs. Anyone planning to attend should notify W1CEQ, Kennebunk.

Traffic: W1CDX 214 BOF 195 ATO 194 CFG 152 EF 118 DHH 108 APR 90 BNC 87 CIP 71 AQW 46 DRZ 41 APX 40 CHF 36 CRP 35 OR 34 BEU-DEQ 33 PB-EOX 31 EFA 32 AFT 26 CPT 19 BTG 14 DGJ 10 BSO 5 AXJ-BZS 3 CBU 2 BJA 14.

RHODE ISLAND—SCM, N. H. Miller, W1AWE—W1CAB is trying to make a good Navy. W1ARK, ESU, GBM, CMG, DNP, EGC, DKR, DBA, GV, and BLJ are on 1.7-mc. 'phone. W1BGM handles a few. W1DAH wants ORS. W1BDQ is unemployed. W1BUX is building c.c. job. W1BOP, AXS, BML, and EOF are on Navy drills. W1CGO is using W1ELU's spare '10. W1ASZ has three schedules. W1BGA is QRL. W1LL-W1ZS is c.c. on 3.5-mc. band. W1AGB has been rebuilding. W1BOS is building c.c. job. W1ALI, ELU, and AAD bust up the air in Pawtucket.

Traffic: W1ASZ 26 EOF 14 CGO 11 DDY 10 BTP 5 AWE 3.

CONNECTICUT—SCM, Fred A. Ellis, Jr., W1CTI—W1CJD puts on an interesting broadcast every Sunday at 9:30 a.m. W1AMG worked FM8IH on 3.5 mc. W1MK leads in deliveries. W1AFB visited the Middlesex Club at Gil's. W1BDI BPLs. W1DGG replaced the '10s with an '03A. W1ES schedules W1BMP. W1AKI sends his highest totals so far. W1EAP gave 1.7 mc. a whirl. W1YU worked FM8IH, PAOQQ and D4ZUA on 3.5 mc. W1LE on 6990 kc. is Army Amateur W1YU. W1BFS says some one is using his portable call. W1EMV is installing a '49. W1BHM is a member of R.S.G.B. W1DOW QTAed all schedules. W1AUK reports via Conn. Net. W1CIG needs schedule with Cleveland, Ohio. W1QV reports for New London gang. W1FIO reports by radio. W1FDM is building 56-mc. outfit. W1APW has National a.c. SW3. W1ERU went to 7 mc. W1AVB works good DX on 14 mc. W1ESD has new receiver. W1AJB lost all but one schedule. W1BMP says traffic will be larger next month. W1TD reports Twin City Radio Club stations, W1GB, will be on 3.5 mc. with c.c. W1DCM blew his filter. W1FOU is a new ham in Manchester. W1BQS is QRL in N.Y.C. W1EWD worked W6CVW on 7 mc. W1FL is building a crystal oven. W1CBA has a new crystal on 3700 kc. W1ALE reports traffic. Those interested in a 56-mc. traffic net please get in touch with W1EFW at Milldale. ExW1BIQ writes to say the Vermont news last month was wrong—he is not W2EOA.

Traffic: W1CJD 1079 AMG 618 MK 569 AUF 567 RDI 474 DGG 253 ES 196 AKI 123 EAP 112 YU 106 BES 94 EMV 87 BHM 74 DOW 59 AUK 54 CIG 48 QV 43 FIO 39 FDM 36 APW 34 ERU 29 AVB 28 ESD 24 AJB-ALE 22 BMP 21 TD-DCM 19 DEF-DBW 17 GC-FIE 16 FOM 15 CTI-DCI 14 BNB-CVD-ABN 12 HQ-CTO 11 BYW-ATW 10 BWM-DMK-BDS 9 NE 8 CWH 6 ADW-CUX 5 CNU-RP 4 ANG 3 EAO-BNP-FOZ 2 CTX 1 UZ 11. (Dec.-Jan. W1ALE 4.)

EASTERN MASSACHUSETTS—SCM, Joseph A. Mullen, W1ASI—Of W1ASF's total, 215 were QSP on 56 mc.!! W1ASI and W1LM are second and third high. W1BFR is trunk liner feeding Boston with traffic. W1ABG reports WEG and WJP in our 3.5-mc. channel. W1CUO tops the Norwood gang. W1BBY has been handling hospital reports Boston to Canada. W1BEF reports Lowell activities. W1CRO has recovered from a siege of YLitis. W1COX is

working on an '04A job for DX Contest. W1DIH and W1EAB are back again. W1DGH has a new mast. W1CSU is on between service calls. W1QF has '10 TNT. W1LJ is on with high power. W1CP is using a pair of '45s. W1QM is "The Daniel Boone of the Yankee Network." W1LX has a new 8 pound YL op. W1DDE expects to go a.w. W1CUP worked 7 districts in one day. W1ALP is keeping schedules. W1BO is burning up the telephones down Plymouth way with his stray R.F. The South Shore Radio Club is planning a hamfest. The North Shore gang are assisting the SCM with Official Broadcast work. W1AYG reports for the gang at WBZ. W1EOZ has a '04A. W1ZH does a lot of rag chewing. W1AGC had a long spell of rebuilding. W1EEI is represented this month by W1RC. W1FR is suffering from OM QRM. W1CWA is talking 'phone. W1AJK has a new rig. W1VA divides time between 'phone and c.w. W1DMT has a multistage job. W1DL is awaiting station license. W1BBX has gone 'phone. WNAC's production department will soon be represented by W1BXL. W1CGB reports for Melross gang. W1DEV has MOPA on 14 mc. W1DEU gets out FB on 7 mc. W1EHP is experimenting with antennae. W1DTD changed QRA. W1DR1 is DX hunting. W1EMN has a.c. going FB. W1BJN is on 56 mc. W1EMG is on 3.5 mc. W1EMF and W1CZN are on 1.7-mc. 'phone. W1CZE got MOPA working. W1EEI is getting PAC sports on 7 mc. W1CSN has c.c. on 7 mc. W1CZO has low power. W1IH has the bug again. W1AGH moved to Reading. W1DSR is on 7 mc. W1KH has gone Shakespeare. W1AKN has realized his dream of a 50-watt. The Boston Trade School has a number of transmitters on the air with W1BTS. W1DIU has been studying commercial transmitters. W1BRB's transmitter is hidden in the cellar disguised as a pile of ashes. The SCM was the guest of the ham club at Mass. Radio School at their 2nd meeting. W1AJA and W1BIO may be heard jabbering away on 3.9-mc. 'phone. W1DNL has been working "7s" on 3.9-mc. 'phone. W1CPD built a single signal job. W1BDT may be heard on 3.9-mc. 'phone.

Traffic: W1ASF 836 ASI 436 LM 422 BFR 394 ABG 135 CUO 113 KH 71 BBY 66 BEF 61 DFS 46 CHR 43 BZO 38 BMW 29 ABF-AGA 20 WV-JL 12 EVJ 4 ME 3. AAL 20.

WESTERN MASSACHUSETTS—SCM, Earl G. Hewinson, W1ASY-RB—W1AJD leads the Section. W1AZW just found out there were traffic prizes! W1BCX heard HC1FG and K7FF on 3.5 mc. W1ARH is working 3.5-mc. DX. W1EFM has dynatron going. W1DLH sends first report. W1BVR is our new RM. W1OF is putting up the prizes for traffic contest. W1DCH QSOed Kansas. The SCM is still without a receiver. W1CJX complains about size of report form L. W1APL is going in for DX. W1BWY is looking for afternoon skeds. W1DCF worked T12WD. W1DVV wants traffic schedules. W1DJB and W1EVZ joined VCR. W1ADF recommends W1DVV for ORS. W1FOF is the call of our YL op, Miss Cook. W1BXF will soon be c.c. 3750 kc. W1CJR is getting a new super-het. Someone is using W1EHL's call. W1FFK and W1CTK report. W1EJV is building 1.7-mc. crystal rig. W1NH is in the 'phone market. W1BWK is changing QRA. W1BVP resigned as RM and ORS. We hope the gang is listening to the amateur program over WBZ-A and W1XAZ every Saturday at 11.15 p.m. E.S.T. Don't forget to QSL Worcester Radio Assn., W1BKQ, elected new officers: pres., W1UM; vice-pres., W1AUQ; secy-treas., E. A. Lindquist. W1EJE joined A.A.R.S. 'phone net. W1AM knows how to make condenser mikes work. W1CHU's big mast is still up. W1KA is back after 2 yrs. absence.

Traffic: W1AJD 138 AZW 111 BCX 108 ARH 99 RFM 72 DLH 63 BVR 60 OF 52 DCH 46 CJK 30 APL 29 BWY 27 DCF 24 DVV 25 EVZ 21 ADF-FOF-BXF-CJR 20 BPT 19 ASY-BOB 18 DIE 15 FFJ 14 ZB 12 DUQ 9 ASU-EFQ 7 CIZ 6 CCS-DLD-FAJ 5 COI-BNL-CWP-FNY 4 AFI 3 ECE 2.

NEW HAMPSHIRE—SCM, V. W. Hodges, W1ATJ—W1CCM is handling traffic with 'phone. W1FQO is new man in Alstead. A.R.R.S. keeps W1APK busy. W1DMI is keeping schedules. W1AVJ has a 250-watt. W1AVL is pounding brass again. W1BEO sends a fine report. W1EAW is on 1.7-mc. 'phone. W1FEX handles heavy traffic with W1UN. W1BAC is trying 56 mc. W1DNC has a new e.c. freq.-meter. W1AXL is trying 1.7-mc. 'phone.

Traffic: W1UN 1046 FEX 554 BAC 141 DNC 75 APK 46 DMI 43 CCM 31 BEO 30 EZT 21 EES 6 BMM 5 IP-AUY 4 EWF-BGK-SK 3.

NORTHWESTERN DIVISION

OREGON — SCM, Raymond L. Cummins, W7ABZ — W7ACH keeps on leading in traffic. W7AEHJ, W7AJX, and W7AWI and YF, had waffles with the SCM and YF. W7BDN puts 250 watts into couple '10s. W7BKD has MOPA. W7AQX was heard in England on 3.9-mc. 'phone. W7CSX will soon be on with c.w. W7AIP rebuilt eight times to get on 14 mc. W7KR is battling the '52. W7BEE is on 1.7-mc. 'phone. W7BMW is Pendleton Club station. W7BDK visited Pendleton Club. W7DP schedules Portland. W7BO is going on 'phone. W7AEH and W7EN are going strong on 3.9-mc. 'phone. W7AKW, W7CIL and W7CAE report through W7BGG. W7MF has been working DX. W7ANB is new portable. W7BDU and W7BRH wouldn't buy a grid leak at the fire sale, because no drip pan accompanied it. W7BGF blew the dust off his rig. W7QW melted the modulator tube. W7KL entertained the SCM. W7BEK has an FB shack. W7AZK is QRL YL. W7UJ works 14, 7 and 3.5 mc. W7AHZ added 1.7-mc. 'phone. W7AIY has key clicks. W7AZZ is working FB DX. W7HD held 20-hour QSO with W7WY. W7AEM has lot of fun on the "Hootch Owl." W7WR keeps busy with OBS. W7PL, W7VT and W7PK report good traffic. W7BMA and W7CBA are c.c. W7BKL and W7BYC have new receivers. W7LT has a nice total. W7BWK reached the east coast on 3.5 mc. W7AXJ is reliable reporter. W7BTF is rebuilding. W7AYE-WJ returns with traffic. W7CQS asks if VE5 is foreign DX. W7BXU has neutralizing troubles. W7AMF is experimenting. W7CFO reports by radio. W7CEJ applies for ORS. W7BQK held 21 consecutive morning schedules with W3AXR on low-power 'phone. W7CQO reports for the Southern Oregon Amateur Radio Club. W7ABD has a pair of '52s. His mother, W7AGT, is active. W7ABC is operator at KGE. W7BKC and W7CRN will soon be back with bigger and better rigs. W7CLK made the trip to the altar. W7UN has been helping fellows hunt bugs. W7CTF is new ham. W7AUQ's wife is an operator. W7GK worked all districts in two days. W7OMI rebuilt. W7BUR sends code practice. W7CBO spent ten days active duty at NPE. W7CAU has PP '45s. W7BTC is becoming "c.e.-minded." W7RR is at U. of O. W7AHV and W7AWK let licenses expire. W7AYN's brother is learning code. W7ED puts a husky signal into the ether. W7CHB hooked a "J." W7AHK is staging a comeback. W7BMR says this flea-power stuff is "phooey." W7AFZ is going strong. W7AIG is new ORS. W7AWII had some notable visitors. W7CMK is in hospital with fractured hip. W7AEJ has hard time keeping highways open. W7AVT joined the Navy. Remember Coos Bay Convention, on April 8th and 9th!

Traffic: W7ACH-SO 476 LT 432 MF 298 ED 251 AXJ 145 AWH 119 CEJ 109 CPO 96 AIG 79 AMF 76 ABZ 67 KL 62 WR 61 BWK 64 HD 38 AYE 35 BMA 20 DP 31 AWI 24 VT 26 UJ 22 CBA-PK-AYN 21 AEM 20 PL 17 BVH 16 APF 15 SY 12 WL-BTH 11 BZS-COU 7 CGD-CSQ-AHJ 6 ANX-AVV-QY-ARY-AVB 5 PYZAL-CFM 4 AYW 2 AZJ-BUF 1 BLN 6 CIH-BOO 1 AQY 5 CNV 4.

MONTANA — SCM, O. W. Viers, W7AAT — W7BCE is star traffic station. W7ASQ and W7EC report by radio. W7AQN is new ORS. W7BVI schedules W9BN. W7BII is awaiting parts. W7BGC is QRL school. W7BJZ is hunting DX. W7CNE is going strong. W7CSG is new Sheridan station. W7CRH has nice string of schedules. W7AHF operates W7CRH. W7AFS is hitting the VKs and ZLs. W7CEG has low-powered MOPA. W7BYE says '47s are the netz. W7BSU has been working on fern. W7BKM sends long report. W7CRC has pair '45s. W7BNU is on 7 mc. W7COX kept schedules for W7AAT. W7EC is National Guard station at Billings. W7JC is pushing key there.

Traffic: W7BCE 549 ADT 243 FL 12 ASQ 193 AQN 121 BHB 7 AOD 21 BDJ 2 BMX 17 COX 33 CRH 240

CCR 15 BVE 22 BQG 6 AMK 20 COY 14 EC 221 (January W7CCR 63).

IDAHO — SCM, C. R. Thrapp, W7AYH-CKO — W7BRU has new c.c. rig. W7CMD is new ham. W7BAU has c.c. rig. W7ARS, AAU and AOT have moved to 7 mc. W7AT built GG's new receiver. W7CAP is experimenting. W7ALY and W7ATN are on 56 mc. W7BAR is building s.s. super.

Traffic: W7AYH 26 CSW 15 ALY 11 ATN 9 BLT 6 BRD 4 BRY 2.

WASHINGTON — SCM, John P. Gruble, W7RT — 79 reports gained over last month! W7IG and W7BHH lead. W7JF makes BPL. W7UUI is parked on a certain BC station's harmonic. W7AZP is new station. W7CSA is on at Bellevue. W7BZK works east coast. W7CQJ is awaiting license renewal. W7ALE, W7BWS and W7CHZ work three-way 'phone. W7CPD clicked J1EE. W7BUW attending WSC. Ex-W7WB is awaiting new call. W7EH says, "You don't have to tap dance to QLF!" D.c. generator was made into a.c. generator by W7ADR and W7AVM. W7BTX worked Japan. W7CQB scheduled W7BTU. W7APS is on 7 and 3.5 mc. W7BKE reports 185 QSOs in one month. W7RT reports contacting 170 different stations in 196 QSOs in month. W7AJ continues to QSP. The Radio City Amateur Club, at Anacortes, uses call W7CNW. W7AAX does come fast bug operating. W7BUU and W7BNI are sole reporters from Wenatchee. W7AEQ schedules eastern DX stations. W7BUQ's schedules are punctual. W7BRW left for Astoria. QRG at W7AGE is 3565 kc. W7BGH has WAC certificate. W7EX uses 300 watts. W7AHW and W7CUD are new men. W7BGL burns the ether with '46s. W7BVR plans 1.7-mc. 'phone. W7CLH has c.c. receiver. W7ATA has YLitis. W7GP booms from Seattle on 3.5-mc. 'phone. W7CJG reports in person. W7APT 'phone on 3998 kc. W7BCB is building monitor. W7BCK and W7BEF are rebuilding. W7CTB and W7CRR are c.c. W7BAC clicked his first KA. W7BIU is Seattle Radio Club proxy. W7BDD and others are shouting, "Beat L.A." W7LD is new ORS. W7WY had a twenty-hour continuous QSO with W7HD. W7CSN is on the air at Hay. W7AFC, BCV, CPK and K7ALT are among visitors at W7RT. W7BEX reports on Walla Walla activity. W7BSX schedules K7FF. W7EH promises traffic. W7BMU, CSK and CSD have DX contests among themselves. W7CKS has new bug. W7AZA is plugging along. W7BJX, CPE, and CBI are active. W7BFB has new junior op. W7BWU worked Cuba. W7BDQ is convalescing. W7LIM is QRL KVOS. W7RJ has new 250-watt. W7BBP visited W7CPK. W7ARQ is on 3.5 mc. W7MK swaps potatoes for QSLs. W7BBD has condenser mike trouble. W7ANV is planning 'phone. W7BVM has YLitis. W7BPM can't get d.c. W7BGO works east regularly. New station is W7CSS. W7WE is coming back. W7AMY got married. Radio store work for W7BKZ, W7KV, Northwestern Director, dropped in on Seattle gang. W7BEX has three-stage job. W7CGK likes Jan. QST receiver. DX on 'phone at W7UO. W7ATW finds depression disastrous to ham radio. W7CPF does good traffic work. W7APR has the same frequency as the SCM. W7ZZT completed station for U.S.N.R. W7AAX is disgusted with the way some lids route traffic. W7CIC is awaiting call letters for Seattle College. W7VE uses W7CQI. W7MM enjoys rag chews. W7GM is a better ham than a woodchopper. W7BFR is on occasionally. W7ACU demonstrated portable equipment before Seattle Radio Club. W7BYB's sister secured license. W7CJL uses '10 in final. W7AWJ is interested in 1.7-mc. 'phone. W7BWZ visited SCAL. W7CJS, JZ, BEY, CHX, AFE, and CE keep ether warm. W7ABU wants snappy schedules. New crystal for schedules at W7QI. W7HS has 400 watts input. W7CHH is NCS for A.A.R.S. W7CLK reports five Aberdeen stations changing to low-power 'phone. Toppensh is kept on the map by W7BCI. W7ALZ has 50-watt. W7BBQ is awaiting let-down in depression. W7BRE is troubled with noise. Best DX at W7ACS is KA. W7BXP schedules W9HKJ. W7IG and W7AFV kept regular schedules. W7AAF and W7BKE are in line for ORS. The Spokane gang have a live-wire

traffic organization. W7AJI's '52 went west. W7AQ, the Yakima Radio Club, is active. W7CND received permanent license. New amateurs: W7COZ, CJN, CFY, CLR, CDC, CJR, and CHU. W7AGK is active in U.S.N.R. W7BEV's shack was once a miniature golf course box office! KFPY keeps W7ADU QRL. W7BCC discovered that two VT-1's have more sock than a pair of '45s. W7BWS helps Centralia. W7AHQ handled rush death message. W7BYB sends an excellent report. W7APY is operating portable 'phone. W7ABX lost a 50-watt. W7AGW is on 14-mc. 'phone. YLitis: W7AHO. W7AGO returned from U. of W. W7AGV resumes activity. 56 mc. has W7BZB interested. W7BBJ is U.S.N.R. station. W7BRI changed QRA. If W7AYO doesn't get those '03As of his working soon, we'll die of suspense. W7IC is located in Seattle. W7AIU and W7AXT are trying 'phone. The Seattle Inter-Scholastic Radio League is planning another city-wide treasure hunt. WASHINGTON STATE-WIDE FIELD DAY, JUNE 10th-11th, FOR A CONCENTRATED PORTABLE EQUIPMENT TEST. GET READY NOW! The Seattle-Tacoma Radio Clubs gave their annual ham banquet on Feb. 17th. Approximately 100 attended the meet. We want to go over 200 traffic reports on May 16th report!!

Traffic: W7IG 335 BHH 297 JF 249 BDD 210 WY 204 BKE 200 AUV 216 HS 115 ARQ 113 CPK 102 BRW 101 BOC 85 BYB 78 ROV 73 AWJ 69 QI-BGH 64 AFC 63 RT 59 CHH 56 AZA 47 APR 41 ACS 39 JZ 38 BRE 33 AHQ 30 BWS-APS-CPF 29 MM 27 APT 25 BNI 24 GP 23 CQB-UU 21 AWY-CFD-COZ-BUK 20 LD-AGE-BXF 19 AJ-KY 16 AAX-CFY 15 BOF 16 CJS-SL 14 AVM-AAF 13 BAD-BUW 12 CSA 11 CJG-CIC-AYC-CFG 10 BAC-CLJ-CPD-CSN 9 TX-BGO 8 ABU-EK-BAO-CNB 7 AAB-BB-CKA-BW-CCF-CAB 6 CFI-AF-ANP-BLX-AMN-BBB-BDA-BTM-CRY 5 NR 21 AQB 9 ANZ-CTS 1 BUQ 45 RUK 22 CIV-CKR-BEY 5 TZ-BDD-ARW-AWP-JB-AQJ-CEC-AIT 4 BFL-CIA-CAM-CHI-BDW-WG-CNS-CNC-KO 3 CNR-CGZ-BUX-BYF-GW-CTS-SZ-AAN-AHT-NO 2 CDA-ADS-AZI-ZZR-AUP-BRC-BEA-AIB-BTZ-AGP-BFG-BCS-CED-AXR-BTD 1.

PACIFIC DIVISION

PHILIPPINES — Acting SCM, Newton E. Thompson, KALXA — New c.e. transmitters at KAINF and KAIWR.

Traffic: KAIHR 1179 LG 284 JR 199 CO 155 NA 151 TS 70 XA 50 PS 41 NF 18. KA9WX 79 EP 73. OMITB 007.

SANTA CLARA VALLEY — SCM, Bruce Stone, W6AMM — W6YG continues fine traffic work. W6FQY has a fine schedule with K6EWQ. W6FBW has a fine total. W6DBB clears to K6 and east. W6AMM is looking for KA schedule. W6CBO continues with KA1CO. W6BMW is clearing to K6. W6DSZ worked all continents but Europe. W6FBF wants the Santa Cruz gang to route K6 traffic through him. W6QR has six schedules on 1.7-mc. 'phone.

Traffic: W6YG 333 FQY 366 HM 268 FBW 207 DBB 200 AMM 156 CEO 99 NJ 42 BMW 36 ACV 30 DSZ 22 FBF 21 BRW 17 ENF 16 QR-AZC 14 NX 9 FMT 8 DHV-BHY 7 CDX 6 UC 5 GUN 4 GOZ 1.

SAN FRANCISCO — SCM, Byron Goodman, W6CAL — W6PQ BPLs again! W6BTZ is new RM. W6NKB BPLs on deliveries. W6BVL is going full blast. W6FBH is QRL NR. W6DZZ schedules XU1U. W6GPB was laid up by sickness. W6DNC is going to build a house. W6AFQ is on 14 mc. W6MV has 48000 volts on '52. W6GXV schedules W7JF. W6EQA is 14-mc. WAC. W6AZK's 211 is a bad actor. W6BIP is looking for a place with no power leaks. W6DQH is c.c. on 3640 kc. W6GET is gunning for traffic.

Traffic: W6PQ 1340 BTZ 215 NK 212 BVL 165 FBH 113 DZZ 97 GPB 70 DNC 56 AFQ 47 MV 38 GXV 30 EQA 28 AZK 23 BIP 22 DQH-GET 20 BLY 18 GOV-ABB 17 WU 16 GIS 15 SZ 14 IU-BMK-DXT 11 CAL 7 EYY-BCA 5 GKO-WF-DWJ-AZX 2 WC 1 CYS 139 ARG 42.

SAN JOAQUIN VALLEY — SCM, G. H. Lavender, W6DZN — W6BRV staged a royal comeback. W6AME is building a high power transmitter for W6COJ. W6FFU got promoted in U.S.N.R. W6FYN is new ORS. W6GKE reports trouble. W6GZE moved to Porterville. W6BIL is improving transmitter. W6GER finds time to operate. W6CTK has 1.7-mc. 'phone. W6COW is doing FB work. W6YBK works all bands. W6BKR is located at Camp 27, State Highway, and is snowbound. W6AHO-W6YE steps up with FB report. W6ENA and W6EXH have good traffic schedules. W6DJQ was on 10-day cruise. W6DVI has new '52. W6BHQ reports much snow. W6CVA wants traffic. W6BFH is a proud father. W6BXB joined A.A.R.S. W6FAN is taking the fatal step. W6AOZ got his transmitter neutralized. W6SF has new s.s. super. W6DZN and W7BAA transmitted a 5-board checker game for the Stockton American Legion and the Firth, Idaho, Checker teams. W6FAG made successful trip to the RL.

Traffic: W6BRV 508 AHO/YE 306 BKR 263 EXH 233 FFU 86 GKE 64 DZN-ENA 63 AME 57 CVA 46 BUZ 42 DVI 39 AOZ 34 DJQ 32 CYY 24 BRU 20 FZA 19 DQR 18 DQV 15 EPQ 14 GXE 13 FYM 12 CVT 9 ASV 6 EZT 5 FRH 4 GCF-GQZ 2 GUZ 1.

SACRAMENTO VALLEY — SCM, Geo. L. Woodington, W6DVE — W6GUK and W6GCM would like dope sheet. W6GSP is rebuilding. W6FPH and W6GUP built outfit for FEJ. W6DVD is new OBS. W6CKO and W6GAC are new ORS. W6CBZ is changing QRA. W6EWB has new c.c. rig. W6CAW is still building. W6AHN is handling G. to P. message. W6FVZ, CXQ, FPN and GHF visited the SCM. W6DVD wants a W9 schedule. W6FPH is new traffic reporter. W6AYU and W6DZY sent FB letters. W6AK is high man this month. W6CIR is on the air with c.c.

Traffic: W6AK 97 CKO 77 CIR 31 DVD 15 DVE-CGY 14 GAC 11 FPH-ECOW 10 CXB 8 GTZ 5 EBW-BHE 3 FEJ-AIM-EAG 2 DYB 17.

EAST BAY — SCM, S. C. Houston, W6ZM — J. H. MacLafferty, Jr., W6RJ-CRM. W6CDA leads the Section! W6GMX has new call, W6HHM. W6RJ has call WLVR in A.A.R.S. W6RF has been appointed ORS. W6EDO has a couple 50-watt. W6AF has rebuilt. W6DHS is on low power. W6YM organized a radio club at school. W6CBF is still sending code practice. W6DUB is on 14 mc. W6BIG is on 1.7-mc. 'phone. W6AHI and W6ANS have consolidated. W6BMS has a YL! W6EDR has been sending the OB. W6GYA is servicing BCL sets. W6BYS is reported on the verge of matrimony. W6CZN has been off due to bad cold. W6AUT visited W6BPC. W6HCT (W6EGM) has good luck with DX.

Traffic: W6CDA 418 GMX 234 RJ 84 RF 54 EDO 49 AF 32 DHS 19 YM 14 CBF-DUB 12 FIT 10 CTL 8 EJA-CIZ 7 CTE-AHI-APB 4 TI-CYE 3 ZM 2.

ARIZONA — SCM, Ernest Mendoza, W6BJF — W6CDU, ZZBC, and FZQ make the BPL. W6BRI schedules W6EK and W5NU. W6GBN works W1, W2, W3 and W4 on 3670 kc. W6CVW gets R9 from J, KA, VK and ZL. W6CBO-W6BCC-W6BVN are moving to new QRA. W6FGG is pushing an '03A. W6ABY has c.c. W6CLL sold TRF receiver to W6EUT. W6EUT has a couple 40-foot masts. W6FIP will reenlist in the Army, April 1st. W6FBN is taking Electrical Engineering course in Los Angeles. W6CGL is chief operator at KCAL. W6HS-W6DEX (W5RM-W5ZZZ) has Altoona, Penna., as his new headquarters. W6BJF and W6CEC drove to Los Angeles on a motorcycle. W6ACN started in 1923 with a spark coil. W6EGI is on 14-mc. 'phone. W6HDI is moving to San Diego. W6HBR is a teacher at Clemenceau. J.H.S. W6HAX uses a TNT. W6CAP and W6ZZG visited Phoenix. W6DCQ has fourteen tubes in 'phone transmitter. W6EFC tests his 'phone. W6DKF is now with KOY. W6DRE finds c.c. '52 satisfactory. W6DOW, W6DPS and W6CEC are planning on taking radio course at Port Arthur, Texas. W6FLG is moving back to Ohio. W6CHX is new Phoenix station. W6GYM (W9JVU, Indiana) moved to Phoenix. W6OCD is located in Douglas. W6FGO has antenna trouble. Ex-W6AAM applied for

station license. W6ANO is heard again. W6CKF has much success on 56 mc. W6EKU and W6AEK work two-way duplex. W6AWD promises activity. W6EBP and W6FKX constructed a public address system. W6DVJ has new QSL cards. W6GFS is QRL Telephone Company. W6HEU is rebuilding. W5ZZB is portable at Phoenix.

Traffic: W6CDU 435 FZQ 213 ZZBC 161 BRI 39 GBN 25 CVW 21 CEC 18 BLP 16 GFK 15 DJH 12 BVN 8 CQF 2 BYD 1.

NEVADA—SCM, Keston L. Ramsey, W6EAD—W6UO is high in traffic. W6AJP is QRL U.S.N.R. W6AXX is QRL school. W6GYX is proving to be a traffic hound. W6FUO is rebuilding. W6BYR is building condenser mike. W6HCE is on 1.7-mc. 'phone. W6HGL is building rig with PP '10s. W6FMS is QRL broadcast station.

Traffic: W6UO 236 AJP 50 AAX 34 GYX 24 FUO 19 CE 16 DSD 12 EAD 11 CRF 3 GUR 3 GZH 1.

LOS ANGELES—SCM, Hal E. Nahmens, W6HT—Our Section was awarded the honor of being the most progressive Section in the A.R.R.L. for the year 1932! Congrats, gang. This is my last report as your SCM, and it is not without a certain amount of regret that I turn over the reins of the Section to your new SCM, Mr. Francis C. Martin, W6AAN. Give him the same cooperation I have enjoyed and the Section will soar to even greater heights! New reporters: W6BWV, W6CID, W6AEF, and W6HBS. Los Angeles County: W6ETL, W6EDW, W6BPU, W6EKZ and W6AOR make the BPL! Regular schedules keep W6FGT at the top. W6DTN is a member of the unemployed. W6EK worked her first ZL. W6AUB is coming to front as a traffic man. Bogue of W6NF is QRL U.S.N.R. W6DEP is erecting lattice tower. W6CVF schedules KA1HR. W6COF is going full blast! New receiver at W6ACL. W6FMK received card from ZS5U. W6AM built 1/2-k.w. c.e. rig for 28-mc. tests. W6FUF is getting out better on 7 mc. W6GXM qualified for ORS. W6BVZ gets big boot out of playing checkers with YL W7NH. W6CJZ got R8 from a ZL. W6BP handled Southern Calif. Auto Club road reports. W6BYF is net station for Long Beach. Long-wave receiver at W6BXU. W6DIO reduced power. W6DHE built an s.s. stenode super. W6DBC's YF, W6GYR, is on 3.5-mc. c.w. W6AFU moved to Glendale. W6EUV is QRL mid-year exams. Rig rebuilt at W6BGN. W6HT traced racket in receiver to corroded pins on plug-in coils. W6LY had '52 on air for 28-mc. tests. W6FJP QSOed first VK. W6BRB is installing P.P. '52s. W6BLS is collecting parts for new 5-stage rig. W6HBS was 9AOH and 9DCF in 1920. W6DQI has returned to low power. W6ERL is accumulating parts for c.e. rig. W6GLZ moved to 2243 Vandalia Ave., L.A. W6AEF reported by radio. W6TE worked OA4U and found Ex-PMZ of Borneo at the key. W6FKF uses pair of P.P. '46s to excite '52. W6DWP is QRL night school. S.S. supers under construction at W6ANN and W6DFO. W6DTS is alternate control for Unit 4, Section 1. New c.e. rig at W6CEM. W6FWN worked couple ZLs. W6FVV has turned to butterfly collecting. W6DTX located a neighbor's brother by amateur radio. W6EMJ schedules W9IHW, W6EGQ and W6BGN built rack and panel job for W6GFG. W6DNF is back on air. W6EMT is studying for 'phone exam. W6CDM, W6FJS and W6ADJ are rebuilding. W6FWT is getting out fine. W6GEX worked ZL; Ruth Greenly. W6GKF and Gan Baker, W6CHY merged (?). W6EFL is back with c.e. Ex-W6CRN is now W6CUO. SWL W6-62 is now W6AHS. W6GPU is QRL USC. W6BQU is building 14-mc. 'phone. W6DOV craves an '03A. W6DJM and W6KA are on 1.9-mc. 'phone. W6DKT is on 14 mc. W6FUS has unorthodox receiver. W6EIA is QRL motor boat. W6CKR is QRL YL. Rig at W6CGP really putting out. W6GVI and W6HDR are new L.A. hams. W6FTU and W6DEH have s.s. supers. W6DDE and W6FEX work in same store. W9ELH is visiting in Los Angeles. W6DZM is attending Louisiana State U. and signing W5BRR. Santa Barbara County: W6BZF in lead with W6EZK second.

W6AWY will soon have a '60. W6EMY can QSP anywhere. W6HFS is new Santa Barbara ham. W6CID got on the air. W6EDZ, DJS and CNO report traffic. San Bernardino County: W6FYT made WAC in two hours and twenty-five minutes on 7-mc. band. W6GKZ, FTV, CUJ and FNG report traffic. W6AMF is being installed at the National Orange Show. Extremely low power at W6DGL. Ventura County: W6DTY resigns from local net. W6CEV, BDZ and BHO report traffic. W6HHG is new Ventura ham. San Luis Obispo County: W7ZZK leads the county. W6DWW is working DX. W6FNP's license expired. Riverside County: W6DZF leads county. W6DLV gets big kick out of 14 mc. New c.e. rig at W6TJ. Rag chewing at W6EFY. Mono and Inyo Counties: W6FVD has schedules with W6BPU and W6CVL. Send your next report to W6AAN, 738 W. Huntington Drive, Arcadia, Calif. So long and 73.—Hal.

Traffic: W6ETL 986 EDW 584 BPU 558 EKZ 513 FGT 347 DTN 272 EBK 253 EK 216 AOR 212 AUB 204 BZF 201 EZK 184 NF 169 DEP 116 CVF 115 BSV 113 FYT 108 COF 90 ACL 85 GKZ 82 BYF 75 FMK 73 AM 68 AWY 64 DLI 62 CVZ 61 FUE 59 GXM-EQW 58 BVZ 56 DZF-ETJ-CJZ 55 AAN 54 BP 53 EMY 52 ETM 51 EGJ-YBB 48 BXU 43 AKW 42 AIF 41 DIO 36 DKM 35 DH 32 NW-DBC 30 FTV 28 ALD-GJA 27 AFU-EUV 26 CZZ-ADH 25 DZP 23 FVD-BGN 21 ERO-HT-CZT-LY-FJP 18 BRB-FZY-DTY 17 BLS 16 HBS-CID-DQI-ERL-GLZ-DTS 15 AQD-BDZ-FOW-AEF 14 FNG-CUJ-DLV-BOT 13 CQM-TE-EYF-GOY-FCF 12 TJ-DWP-ADP-ANN 11 BWV-BHO-EDZ-CEM-DNA-FWN 10 FSE-EYF-DOK-DTX-DJS-EMJ 9 CNO-GVS-DVV-EFY-CAH-BOB 8 CVV-FMW-VJ-BPD-DZR-GMA-TN 7 FMH-DCJ-GOX-CXW-DQZ-FLY 6 CIX-ATG-EYF-CUU-FXL-DYQ-FFF-BFL-CUY-GFG-AAE-DZK-DSP-HAT-DYH-DOP-GAD 5 CJS-NQK-DFG-HBD-LC-DWW-FFN-BYU-GQL-MA-AHP-DLN-CRM-AGF-DRQ 4 FEC-FEW-VO-BXL-GNK-ZZCL-FWV-AEO-CUH-BKI-GTE-EYJ-FXR-EQG 3 BER-ALQ-EGC-FDZ-BZX-AMQ-EWC-ERM-FGH-FDM-GIG-FLC-GNZ-GFE-EXQ-HCB-BVD-GPX-GZV-FTZ-ETX-FFX 2 GMC-ECM-ZZA-BQF-GEX-DFO-FMI-CBJ-EV-GM-FSJ-GNM-BWG-EFQ-DQG-DZI-BHP-BGF 1. W7ZZK 40.

HAWAII—SCM, C. D. Slaten, K6COG—Several of OARC members gave hand to defending forces of Hawaii during recent Army-Navy maneuvers, including K6AIU, K6ETF, K6OA, K6BHI and K6ENE. K6AGI has been working 1.7-mc. 'phone. K6CIB is on 3.9-mc. 'phone. The Hilo Club is going strong. New officers of OARC: K6BHI, pres.; K6AGI, secy. and treas. K6GUA is handling good bit of traffic. K6EWQ leads traffic. K6DLH (Miss Moses) is chief cook of H.A.R.C.

Traffic: K6EWQ 1141 GUA 174 GBY 53 CIB 19 GQF 18 EDH 8 COG 7 DSF 5.

SAN DIEGO—SCM, H. A. Ambler, W6EOP—W6BMC leads the Section. W6GMV is second high. W6DQN has six schedules. W6EFK is an ORS. W6BUG leaves in July for China. W6FQU worked K6. W6EOP is on Trunk Line "F." W6BBR is new reporter. W6AMO is getting ready for DX contest. W6BHV is taking out ORS. W6FWJ is back. W6DFU and W6GNL have new rigs. W6EFD is on 'phone. W6DAZ is QRL work. W6BEY has transmitter in the radio store. W6EAB is A.A.R.S. W6AJG climbs poles in day time. W6CXN is heard regularly. The Imperial Valley Radio Club are planning on a Booth at mid-winter fair at El Centro. W6CTR reports via radiophone. W6CTP lost antenna in wind storm. W6BCF received new ORS-A.R.R.L. pin. W6HY, EOP, DNW, DNS, GCT and DAI met at W6EOL.

Traffic: W6BMC 923 GUV 473 DQN 309 EFK 67 HUG 45 FQU 41 EOP 35 BBR-AMO 25 BHV 16 FWJ 14 CNK 9 AKY 7 GTM 10 ACJ-QA-BLZ 4 CNQ-BAM 3 GTD-DWA-AXN 2 FCT 1.

ROANOKE DIVISION

WEST VIRGINIA—SCM, C. S. Hoffman, Jr., W8HD-W8AZD worked his 18th country. W8GB is working on new rig. W8HWS is installed at Linsly Tech.,

Wheeling. W8BOW is DXing. W8CRC is located at Wheeling High School. W8GBF continues schedules. W8CVX reports W8AAI going c.c. on 3.5 mc. W8HSA says things dry around his place. W8GEG is using W8ZZAF. W8EL is new ORS. W8IB is going on with '52 c.c. W8FO uses spark coil c.w. W8MN threatens A.A.R.S. comeback. W8EIP's wife died. Bluefield Amateur Radio Club boasts 35 members. W8CZ and W8EIK will handle the W. Va. Governor-to-President message. W8EIK announces a QSO party for the Division. W8ELJ says skip is bad. W8LS, W8CBS and W8HBB are changing to c.w. W8BKI is experimenting with 56 mc. W8CHM gets out FB on 'phone. W8CHP is changing to c.w. Ex-8BJG may be heard from W8GKK. If you want to QSO W. Va. stations, or QSP traffic into W. Va., do so Sundays from 11:00 a.m. to 2:00 p.m. on about 3700 kc. W8OK or W8HD generally call "WV," the A.A.R.S. call meaning "QST W. Va.," at 11:30 a. m. W8ZW is on 14 mc. W8JM uses '03A c.c.

Traffic: W8ZZAF-GEG 160 GBF 141 EIK 136 GB 118 OK 67 JM 39 HD 35 HSA 68 CVX 64 AZD 53 BOW 49 CWY (?) 41 EL 27 CMJ 25 CSF 22 DPO-HCL 14 FQB 13 GRJ 10 ELO 8 BKG 7 EWM 5 FKR 4 CDE-ASL-DFC 3 FUM 19.

NORTH CAROLINA — SCM, H. L. Caveness, W4DW — The N. C. QSO contest, held three Sundays in February, was a huge success. Watch the "Tarheel Ham" for announcement of another contest. W4BUE is new ham in Raleigh. W4AIS sends good report. W4VB has been working DX. W4TO rebuilt his s.s. super. W4AWZ sold out. W4HX is working 7 mc. W4TH put a 211 in final. W4BKH and W4AZD are using '10s P.P. W4HM and W4LY are heard occasionally. W4ABN is servicing BC sets. W4GW is going strong on U.S.N.R. W4BMG and W4PFU are new in Asheville. W4TJ took his first solo flight recently. W4ATC has reliable schedules. W4VN put in mercury vapor rectifiers. W4AAE is helping out in traffic. Sickness kept W4ALD off. A good string of schedules at W4AOE. 28-mc. experimentation at W4ZH. W4HI is interested in 56 mc. The Greensboro Club is using portable W4PCG. W4ABW has been working west coast stations. W4AIT reports by radio. W4AGX got first-class license. W4JR enjoys the Sunday p.m. QSO parties. W4AOA is building a reputation as a traffic handler. W4NC is getting ready for DX contest. W4RA is going to try 14 mc. W4BJZ is handling traffic. W4ZN and W4BPU are on regularly. Several Winston-Salem Club members attended a meeting of Greensboro Club. W4ANU is getting out well. W4BKG is building a crystal oscillator. W4BRT is working 3.5 mc. W4DW resigned as State Control A.A.R.S. W4EG has been appointed in his place. W4BQP sends some good dope. The Naval Reserve Net, headed by W4CQ, is functioning FB. Have you seen a copy of the "Tarheel Ham"?

Traffic: W4DW 222 JR 196 AOA 129 NC 128 AOE 100 VN 94 AIT 89 ATC 88 AIS 81 TJ 77 ZH 56 ALD-ANU 54 AAE 32 TO 30 PCG 24 BJZ 23 ABW 22 VB 18 AVT-JB 11 AGF 10 BRK-RE 9 DQ 7 MR 6 TP-OG 5 AL-AGD-PA-RX 4 BIU-BKS 3 AMC-QT-IF 2 ATY 1 EG 17.

VIRGINIA — SCM, R. N. Eubank, W3AAJ — W3BKS is using 211s. W3AUG is going strong. W3WO is back with us. W3BJX has good schedules. W3NB-NT keeps total up. W3ATY is doing FB with Peninsula Club. W3AEI passed unlimited 'phone. W3BPI and W3BEP are active. W3BAI had 8-band-QSO with 3CAH. W3CSY added '10 amp. W3CKM says A.A.R.S. going full blast. W3AAJ and W3BXN are QRL work. W3FJ is on 14- and 3.5-mc. 'phone. W3BXP deserves ORS. W3CVN is president Roanoke Club. W3CAH is FB OO. W3AKZ handled death message. W3BAD has fine sig. W3AI is at V.M.I. W3BYA worked a "7." W3AHC reports club FB. W3AKN is officer in Peninsula Club. W3GY was heard in VK on 3.9-mc. 'phone. W3MQ is active ORS. W3CSI is on 3600 kc. W3AAF says club station soon at Bluefield. W3CUR is new call in Richmond. W3BFS is using '45s. W3BJE is at new QRA. W3ADD is on 7100. W3CVU is

lining up schedules. W3BFQ is building panel job. W3BIB let license expire. W3QN will be on soon. W3FE is QRL school. W3CFL is on Sunday and nights. W3UVA has '47 c.c. W3RZ will be on soon. W3BNH is planning on traffic. W3BLE is on 3590. W3BZD reports. W3BZE has new receiver. W3WW and W3AOT are c.c. W3CWF is new call in Portsmouth.

Traffic: W3NB/NT 653 ATY 370 CXM 362 AAJ 146 BJX 135 BNH 128 FJ 122 BXP 103 CVN 113 CAH 64 BLE 46 AKZ 44 WO 40 BAI 39 AUG 33 BAD-BPI 30 AII 25 BYA 25 AEI 20 ABC-CSY 19 BEP 18 BKS 15 AKN-GY-MQ 14 CSI 13 AAF 16 AMB-BGS-COO-KA 11 AGW-BUY 10 BRY-ZA 9 CLH-ZU 8 AJA-WM-GE 7 ADJ-BIW-TN-CHE 6 BSB 5 AVR-BUR-CNY 4 AIJ 3 BDZ 4 BZA 3 BAN-BSM-CLD-BTR-BGX-CDW 2 AZU-BSY-CKM 1 HV 12 NE 2.

ROCKY MOUNTAIN DIVISION

UTAH-WYOMING — SCM, C. R. Miller, W6DPJ — Utah: W6BXT reports several schedules. Good totals at W6AFN and W6DEU. YL retards activity at W6EXL. W6GQR rebuilt. W6DPJ cut schedules because of school. Wyoming: W7ARK-W7CST sends 73 from Burlingame, Calif. Over six feet snow at W7AWG.

Traffic: W6DPJ 148 DEU 55 AFN 50 BTX 41 EXL 26 GPJ 18 FAE-DTB 6 GQC 1. W7COV 19 COH 10.

COLORADO — SCM, T. R. Becker, W9BTO — At the last meeting of new club of Denver officers were chosen: Earl Haupt, pres.; W9BYK, vice-pres.; Bill Gundlach, secy.-treas.; W9BTO, sergeant-at-arms. W9ESA sends usual FB report. W9GVN, W9FCX, W9ACV and W9JRV get FB reports. W9CBU has trouble with receivers. W9CJJ is at KFEL. W9AUJ and W9BQO are QRL depression. W9EMU is installing '52s. W9GUW corresponds with some of the fellows. W9AQN wants another '52. W9JGF has MOPA. W9IPH has been bitten by 'phone bug. W9BYY reports an overhaul of his super. W9CVC reports nice total. W9AAB requests all who have comments or criticisms regarding League affairs to get them in his hands not later than April 1, 1933. W9EAM has been ill. W9CWX says DX dropped off. W9FYY has been QRL shack building. W9HIR's transmitter is o.o. W9GHL has been QRL North High. W9LJU has been working DX. W9BJN, W9KI and W9ITE will soon be on. W9HRI will be on with '52s. W9DDF is changing to TPTG. W9APR is QRL KGPX. W9FRP had a '50 go bad. W9IAV took unlimited 'phone exam. W9RJ has an '04A. W9BYK is threatening to go back to '10s. W9LJM has the bugs out of his rig. W9HFW is getting out OK. W9BCW is pounding away at U.S.N.R. W9BXQ is QRL Police Station. W9CAB, W9BYC, W9FYK, W9FUQ, W9ATM and W9JB are active. W9ESX needs a job. W9HF is still with us. W9CNL is on in the early hours. W9ELW works his share. W9GBQ is QRL social affairs. W9EKQ and W9KIN get on when time permits. W9HJS has been on sick list. W9HGK, W9FYL and W9EPC are on now and then. W9DGJ is building receiver. W9ASD is QRL school. W9HOO is in process of changes. W9JGA is on 1-mc.7-'phone. W9HOU is using low power. W9EKQ keeps A.A.R.S. on the map. W9FA keeps reliable schedules. The Radio Club in Boulder is now known as University of Boulder Radio Club. W9HIR has new receiver. W9FFU is building new rig. W9FZM and W9LLP are new hams. W9KRV and W9ADR are going strong. W9JFQ, W9FYK are QRL college. W9FES and W9YL are building s.s. supers. W9IUH threatens a comeback. A blessed event took place at W9HKN. W9JFD has new a.c. receiver. W9KKY is QRL cigar store. W9CKO can't get out of town. W9FRQ and W9DRQ are DXing. W9FQK is pushing 100 watts into MOPA. W9HWR is on 3.9-mc. 'phone. W9BJS has flea power 'phone. Rocky Ford Amateur Radio Association is now affiliated with A.R.R.L. W9GPP and W9FPD were Rocky Ford visitors. W9BRZ worked KALCM. W9AYP is SNCS, A.A.R.S. W9HHF is getting the bug again. W9GNK sends his report from San Francisco. W9EII reports 3.5 mc. good for DX. W9FPD is going strong. W9CLX will be on 14-mc. 'phone. W9IQS worked a K6. W9LFE wants lots of traffic. W9EYN took commercial exam. W9EPN is rebuilding. W9LIJ has portable rig in his Ford. W9HIW reports reorganization of San Isabel Radio Club. W9FYP is QRL

YF. W9DNP is QRL KVOR. W9KZS is QRL poker games. W9JNV keeps his total up with reliable schedules. W9CWA reports by radio.

Traffic: W9ESA 1048 CVE 391 CND 59 CDE 12 GNK 200 QDQ 2 EII 26 IFD 11 CWA 23 EHC 15 GCM 10 JNV 253 BJZ 15 GLI 9 GLG 4 AYP 67 JCQ 2 LIU 1 JAV 2 HDI 1 AMS 7 CJJ 20 GVN 24 FA 352 BYY 30.

SOUTHEASTERN DIVISION

ALABAMA — SCM, L. D. Elwell, W4KP — W4AJF is a high traffic station. W4AAQ is high DXer. W4DS is our new RM. W4AG is getting kinks out of c.c. rig. W4ASM has come back to life. W4AKX is building receivers. W4BCL is putting in repairs to the teeth. W4BCU is doing fine work on 3.9-mc. 'phone. W4FL is in A.A.R.S. Net. W4BJA and W4AJC are going c.c. W4JX made 40 QSOs in one day. W4OA and Mr. McDermott paid a visit to W5HR and W5QL. W4BAI is going to 1.7 mc. W4APJ has good schedules. W4BCV has MOPA on 56 mc. W4AGI worked two EARs and two ZLs in a day. W4BSH says anybody sending dots is calling him! W4BSL and W4BSN are newcomers. W4BOU is building c.c. rig. W4PDR is at U. of A. W4ALG is chasing bugs out of transmitter. W4AKM is QRL. W4AKP expects to be back soon. W4AIK is installing a "52." W4AUS is on with an FB 'phone. W4AXU has Class B modulated '03A. W4PFU is now in Asheville, N. C. W4AEZ and W4AP reported via 'phone. The club at Birmingham is going fine under leadership of W4BOE. They have made arrangements for 1933 Southeastern Convention to be held in Birmingham. W4BFP is schooling at Fort Monmouth, N. J.

Traffic: W4AJF 252 DS 72 APJ 22 FL 20 JX 21 AJC-BAI 15 ALA-DD 14 AAQ 13 AYK 11 APU 5 ZS 2 KP 9.

WESTERN FLORIDA — SCM, Eddie Collins, W4MS-W4ZZP — RM, W4ACB-W4PCN. W6HET sends CQ and the entire east coast answers. W4BSJ is new ham in Madison. W4ATF visits the gang week-ends. W4ACB-W4PCN has an FB portabls rig. W4QR-W4PEL passed this exam. W4ASG let licenses expire. W4BGB keeps 3.5 mc. hot. W4ARV has batteries on oscillator and spark coil on P.A. W4ASV-W4ZZW says his receiver is a "comic pro." W4ALJ-CV-ZZAE went to Miami to take exams. Ex-W4ADY is trying to get ex-W4MX's call. W4ZZAO clicks VE regularly. W4ZZR promises to get back soon. W4KB built an oven for his crystal. W4BMJ is busy furnishing diagrams of his rig. W4BCB ironed out the wrinkles. W4BKD steps out nicely. W4AQY-W4PDS keeps the highway hot to Milton. W4ABV, W4AQa and W4AGS-PCK are QRL school. W4AXP works all districts but W7 on 3.5 mc. W4QU's note was so RAC he QRT. W4QK has new shack. W4VR wants to get back on. W2EVB is interested in 56 mc. W4MS-W4ZZP added CE and D to countries worked. W4KB schedules an SWL in Pensacola.

Traffic: W4BGA 5 AGS 32 MS 23 ACB 20 AUA 8 QR 14 BKV 8 KB 20 BFD 3 AXP 13 AQY 18 AUV 1 UW 6 AUW 12 W5ZZR 3 W6HET 13.

GEORGIA-SOUTH CAROLINA-CUBA-ISLE OF PINES-PORTO RICO-VIRGIN ISLANDS — SCM, Chas. W. Davis, W4PM — W4WZ and W4IR are way out in front. CM8AZ reports all amateurs within limits of a Navy station closed down by Chief of Naval Operations. K4BV reports via W2OC. K4UG is on 7 mc. K4RJ is rebuilding. K4AOP is QRX. K4BSE is new ham. K4BU has QSO'd W2CMO 115 times. W4BAG is on 3640 kc. W4ATZ hopes to put out 100 watts. W4PM wants more reports.

Traffic: W4WZ 864 IR 270 ATZ 43 SS 7 AAY 25 AJI 10 MA 24 BAG 36 BQX 14 PM 36 BW 1. K4BU 27 BRN 2.

EASTERN FLORIDA — SCM, Ray Atkinson, W4NN — In the 100 total club this month: W4VP, W4AYD and W4NN. W4PQ almost lost his tower in wind storm. W4AJX made WAC in 20 hours. W4AFU is rebuilding. W4AII is busy man. W4ALP is stimulating worthwhile traffic. W4UX and W4DE are handling traffic. W4ABG is building MOPA. W4NN is rebuilding. W4AZB

is doing good O.O. work. W4WS sends high total. W4BRO is new ORS-OBSS. W4BJS is working plenty. W4BAM hopes for more traffic. W4BGG is new ORS. W4BDM is making a reputation as a traffic man. Reports indicate that W4ANS' call is being bootlegged.

Traffic: W4VP 134 NN 140 AVD 103 BRO 86 BGG 55 WS 53 BDM 33 UX 25 ALP 19 ACB 21 PQ 16 AKJ-BAM-DE 15 BSJ 14 BIN-TZ 12 BGL-HY-MF 6 ACZ-DU-BNR-UH 4 BMN 2 BOT 1 AKH 5.

WEST GULF DIVISION

OKLAHOMA — SCM, Emil Gisel, W5VQ — W5BMU and W5CEZ tie this month. W5BPM sends nice total. W5ALD installed rig in Armory. W5BDX uses directional CQs. W5AKX is back in Oklahoma. W5GF is on 7125 c.c. W5AEI-W5BXD has incorporated with W5AEF. W5CRW rebuilt. W5BOP burned up a plate transformer. W5BTF is QRL A.A.R.S. W5BAT rebuilt speech amplifier. W5PP-W5AJO are going to push-pull. W5AWG is on high power.

Traffic: W5BMU-CEZ 309 BPM 214 ALD 120 BDX 87 BOE 46 AXA 33 AYP 6 AVN 4 ALE 3 AND 2.

SOUTHERN TEXAS — SCM, D. H. Calk, W5BHO — W5OW sends usual FB report. W5MN keeps a nice lot of schedules. W5YL says 52 hams took the exam there in Feb. W5PF worked five "J" districts. W5AOT is on 14-mc. 'phone. W5CGD has a fist full of licenses. W5BNJ reports the death of his mother. W5AUX is building transmitter for Gal. Amateur Radio Club. W5BTK reports the Gulf Coast Storm Net working FB. W5CPA and W5CPM are building new transmitters. W5BEH is rebuilding. W5BUD is awaiting new tubes. W5YH worked K6BAZ on 3.5 mc. W5BKE, RM, is c.c. on 3505 kc. W5BKG has been sick. W5VV and W5BGG are on 1.7-mc. 'phone. W5BXH is QRL BC work. W5APX will again take over the Texas 'phone net. W5SM is doing FB on 7 mc. W5AFG is coming on 3.9-mc. 'phone. W5BTE is on occasionally. W5OL has moved to Dallas. W5CLE reports key clicks in BCL sets. W5BTD reports new op. at his house. W5BRC has been in the Southern Pacific Hospital with a lams back. W5BKW wants schedules. W5CEI is on 1.7-mc. 'phone. W5VA blocks all ham receivers in Houston.

Traffic: W5OW 1366 MN 158 BKE 145 YH 101 YL 80 BNJ 60 PF 34 BUV 24 ADZ 12 BKY 7 BYG 4 ES 20 ON 3 BHO 9.

NORTHERN TEXAS — SCM, Roy L. Taylor, W5RJ — W5BII leads this Section. W5AUL runs a good second. W5ARS advises that the W.F.A.R. will hold its annual banquet, April 18th, at 8 p.m. W5BBQ is making a come-back. W5ANU is doing mighty fine work. W5IT is handling good traffic. W5BCW still pounds them out. W5AHC has nice total. W5BNF has National SW3. W5CY finally got the nerve to report. W5BSY is troubled with QRM. W5SU-AGR-ZD have completed a year of bi-weekly code practice. W5SH is back on the air. W5RH reports OBS schedules. W5BAY is QRL peddling electricity. W5QA blasts the air. W5SP has given up hopes of African QSO. W5CPH has P.P. '10. W5CUK is new ham at Abilene. W5BTB has W5AUL's mast. W5AW has developed into a real operator. W5AVX is QRL YLs. W5BNS has wires strung all over this house. W5BST sure makes good wine! W5BXY is in love. W5BJU is QRL making SW receivers. W5AUN is still a "5 and 10" man. W5AUJ was QSO Africa, Java and P. I. W5BCE is trying to quit. W5AZB sells lots of receiver. W5AGQ is figuring on a 14-mc. 'phone. W5AMK worked two J's. W5AHZ will be on 7 mc. W5LM is rebuilding. W5CKP is building c.c. rig. W5AMW is pounding brass. W5AKA is helping W5BXV get on air. Cen-Tex Amateur Radio Club anticipates giving code practice on 1750-kc. 'phone. W5BYO moved. W5BA expects to be transferred to Wichita Falls. W5LU has a new step-momma. W5AIW is on occasionally. Due to pressure of business, W5RJ resigns as SCM. I have enjoyed every bit of term, and sincerely regret that I can no longer see my way clear to carry on.

Traffic: W5BII 276 AUL 215 ARS 185 BBQ 160 ANU 112 IT 97 BCW 69 AHC 60 BNF 48 AJG 40 AFQ 23 ASA 19 BJX 18 CJJ 39 AID 22 IA 34 CAM 25 ARV 5 NW 4.

NEW MEXICO — SCM, Jerry Quinn, Jr., W5AUW — W5CPO has new MOPA. W5CSR will be with us soon. W5CFY is QRL. W5AUW has been QRL service shop. W5AIC is QRL work. W5ZM says 1.7-mc. 'phone is the berries. W5ZU has a few schedules.

Traffic: W5AUW 215 ZZQ 6 CJP 9 CPO 40 CGJ 10.

CANADA

MARITIME DIVISION

NOVA SCOTIA — SCM, A. M. Crowell, VE1DQ — VE1ER is our new RM. VE1BV has gone in for DX. Join in on the Sunday afternoon 3.5-mc. c.w. rag-chew parties. VE1EP hooked FM8IH and K5AA. VE1ET landed CM2MG. VE1AX will soon have Class B 'phone. VE1AS is giving 14 mc. a try. VE1EK works 7 and 14 mc. VE1DM is making this old 14-mc. 'phone kick out. V08AW reports new VOs active; V08A, 8P, 8W, 8YY, SAB, SS, 80.

Traffic: VE1ER 62 BV 26 EP 12 EA 10 DQ 8 CW-CY 2.

ONTARIO DIVISION

ONTARIO — SCM, H. W. Bishop, VE3HB — Winners of the Ontario QSO Party were VE3GT, first; VE3IR, second. QSO Parties will be held on the last Sunday of each month; stations worked within 15 miles radius will not be counted. Ontario RMs are: Chief RM, VE3GT; RMs, VE3HA, VE3HP, VE3CP, VE3WX. VE3PS is looking forward to traffic handling. VE3OY is rebuilding. VE3ELJ is changing QRA. VE3HU wants to QSO announcers and ops. VE3CX blew his dry electrolytics. VE3LY is ORS applicant. VE3FW is thinking of QRO. VE3GS wants a pal for a 75-watter. VE3GB gets out FB. VE3RA is still in Toronto. VE3HN is making use of GT and HA schedule. VE3DX is coming to life. VE3OZ schedules VE3WF. VE3LY works west. VE3OF is new ORS. VE3BU lacks power. VE3HT is getting interested in traffic. VE3QD and VE3MG are new hams. VE3QH will soon be on. VE3IA sticks to 7 mc. VE3OJ has MOPA. VE3JU is heard daily. VE3DC has been QRL flu. VE3PG is op. at CKOC. VE3CT is back on 3.5 mc. VE3NC is never on 'phone, but gets "lotsa" 'phone cards. HARA is showing pep. VE3KM schedules Grimsby and Brantford. VE3HW is "regusted" with low power. VE3HY says the SCM is hard man to raise. VE3GO reports for first time. VE3RK works alternately with VE3SA. VE3JI is handling traffic for Naval Amateur Net. VE3IH has 1.6-mc. 'phone. VE3NX gets good results. VE3LQ gets but little DX. VE3PR and VE3YY are new ones. VE3PN makes excuses. VE3GL is experimenting. VE3MQ promises a visit to London. VE3EU has good time on 1.75-mc. 'phone. VE3OS makes his bow. VE3NU has new QST receiver. VE3OO worked his first DX. VE3LN has high-power craze. VE3PM is QRL serving drugs to sick hams. VE3RL is QRL other activities. VE3CF is studying 56 mc. VE3AD ran afoul of Buffalo cops! VE3CM blew a fifty. VE3WM is looking for new location. VE3KC has good sock. VE3GC has new rig. VE3FD has Class B modulated 'phone. VE3EL is on 3.9-mc. 'phone. VE3HB tries 'phone. VE3DW bumped into the SCM unexpectedly! Anyone wanting schedules with Border cities, get in touch with RM VE3WX. VE3QR gets out FB. VE3WJ has a new alias, "Shuttlecock." VE3OE is club carpenter. VE3WF is doing some FB traffic work. VE3BY loaned his transmitter to Frontier Radio Club. VE9BW is QRL CKOC. VE3EC is QRL starting cars in cold WX. VE3OH is rebuilding to handle traffic. Everybody in Border cities is busy on Convention plans and hope to see all VEs on May 19-20-21, 1933. VE3LT worked a G5.

Traffic: VE3AD 570 HA 233 CP 105 JI 105 HB 48 OZ 42 IH 41 OY-GO 33 HP 31 HN 24 HY 22 SA-LI 18 BV 13 LU 12 NE 15 IB 10 DB 8 EL 7 PP 6 QB 4 GI 2 DD-

HX 1 GT 390 WX 260 DW 188 WF 61 QK 51 WJ 25 AU 21 WK 13 RO 8 WA 6 OM 4. VE9AL 12.

QUEBEC DIVISION

QUEBEC — Acting SCM, J. C. Stadler, VE2AP — The South Shore Radio Club had a fine hamfest. VE2CA's MS score in BERW might give him this cup. VE2EU is training a second operator. Welcome to VE2GK! VE2FE has a 211 in last stage. VE2AP has January QST receiver. VE2EM and VE2DX keep 'phone band busy. VE2BC will soon move to better QRA. VE2AB reports for Quebec region. VE2BF and VE2CU are on 3.5-mc. 'phone. VE2DB, VE2DD and VE2AB are rebuilding. VE2EY is on 14 mc. VE2EO and VE2DW are active on c.w. VE2GM is a newcomer. VE2CS worked Africa and Europe. VE2BE wants to know if there is anything to call to his attention for the Directors' meeting.

Traffic: VE2DY 7 DR 12 BO 16 CX 49 FE 61 AP 97 CO 12 BG 15 BB 47.

VANALTA DIVISION

ALBERTA — SCM, C. H. Harris, VE4HM — VE4BV is contemplating c.c. VE4DQ is on steady. VE4DT is busy buying wheat. VE4EA works all W districts on 14-mc. 'phone. VE4EC is out of hospital. VE4FJ is back on air. VE4FR has new super. VE4GT works the odd station. VE4GY has numerous schedules. VE4HM is second op at VE4LE. VE4IZ hears lots DX. VE4JQ helped start ham club at Vegreville. VE4LM has dandy note. VE4HW and VE4FI are taking c.c. VE4MI is new ham. VE4GD is on 7 mc. VE4IT and VE4GZ sold station. VE4HV is on occasionally. VE4JI is opr. at CFAC. VE4ME is QRL school. VE4IQ is building 'phone. VE4JD is building set for Navy. VE4JW has MOPA. VE4KQ is trying 1.7-mc. 'phone. VE4CG has new outfit. VE4MG and VE4KG hope to be on soon. VE4CY and VE4CU are rebuilding.

Traffic: VE4DT 416 JQ 45 DQ 41 GY-IZ 15 HQ 10 DY 8 EZ 7 JK 4 EO 3 DX 2.

BRITISH COLUMBIA — SCM, J. K. Cavalsky, VE5AL — VE5HP leads traffic. VE5FG is rebuilding. VE5AL QSOed the Canadian Genl. Mgr. VE5EV has reduced power. VE5GS and VE5AI are increasing theirs. VE5QR is using 'phone. VE5EX is looking for place to hang skywire. Portable of VE5BH was heard in Germany. VE5GT is on his way to Vancouver. VE5DQ has new heap. VE5EZ is DXing. VE5HY schedules Vancouver.

Traffic: VE5HP 199 FG 58 GT 44 EC 10 HO 15 AC 50 AL 19 FE 27 BI 8 HZ 9 HQ 22 CG 4 GS 3 EE 4 DF 54 JC 2.

PRAIRIE DIVISION

MANITOBA — SCM, Rex Strong, VE4GC — VE4AG holds traffic banner. VE4FT wins M W E A DX Trophy. VE4LC is ex 4DI. Heard on 3.5 mc.: VE4XH and VE4RC. VE4AD and VE4AY are active. VE4IP is building c.c. rig. VE4BQ handled QRR. VE4CP has swell signal. VE4DK schedules east and west. VE4PN will be back soon. VE4GC plans four band operation. VE4WK believes the early bird works the DX. VE4LL is at Norway House with Western Canada Airways. VE4MW applies for ORS. VE4IF was heard. VE4NX schedules Toronto. VE4CI wins the Cummings Award for best all round station.

Traffic: VE4MW 32 CI 27 FT 26 GC 18 DK 12 LN-AG 11 KU 2 FP-CS 1.

SASKATCHEWAN — SCM, W. Skaife, VE4EL — The Moose Jaw Club is doing nicely. Welcome to VE4MT. VE4BB reports improvement on 7 mc. VE4KA is DXing. VE4HX has hung a bottle on the wall. VE4MA and VE4MB are doing nicely. VE4JV, VE4FD, and VE4EJ are pounding away. VE4BF works VKs and ZLs. VE4BK has p.d.c. note. VE4AZ-VE4BG is open for traffic. CQ Swift Current de VE4EL. K.

Traffic: VE4CM 168 BB 100 AT 75 EL 24 HX 18 BF 12 GR 6 BM-IY 3 JS 2 IG-IV 1 AU 172 AZ-AV 7 LP 4 EN 2 EH 46 MH 8 JH 3.

• I. A. R. U. NEWS •

Devoted to the interests and activities of the

INTERNATIONAL AMATEUR RADIO UNION

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Vice-President: C. H. STEWART

Secretary: K. B. WARNER

Headquarters Society: THE AMERICAN RADIO RELAY LEAGUE, West Hartford, Conn.

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tionaal Radioamateurisme

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Union Schwela Kurzwellen Amateur
Wireless Institute of Australia
Wireless Society of Ireland

Conducted by Clinton B. DeSoto

Official:

TWO changes, nominally in name alone, have been made in the I.A.R.U. membership. In Spain, the merger during January of the *Asociacion E.A.R.* and the *Red Espanola* into the new common society, the *Union de Radioemisores Espanoles*, has cleared up the disturbed condition existing in that country for some time. The vote for fusion was unanimous among the amateurs of Spain; for this and other reasons the new *Union* is regarded as the successor to the *Asociacion* in I.A.R.U. membership, the change being accepted as in name only. The president of the new society is Angel Uriarte, EAR12; vice-president, Jose Merce, EAR219; secretary, Francisco Bellon, EAR110. The new headquarters is at Jacometrezo 1, Madrid; the mail address Apartado 262, Madrid.

In Poland, a gradual but notable change in the general character of the *Lwowski Klub Krotkofalowcow* since the time of its acceptance into I.A.R.U. membership in 1930, as a result of which the *Klub* become merely one of a number of regional groups subordinate to the parent national society, the *Polski Związek Krotkofalowcow*, brought about the decision to consider the P.Z.K. the present Polish member, without direct action other than in the change of name. The headquarters address of the P.Z.K. is Sniadeckich 23 m 14, Warsaw.

As in the business world, mergers of amateur radio societies seem to be occurring regularly, resulting in the strengthening of organized amateur radio in the countries concerned, and the world in general, as well. In Czechoslovakia, the two competing amateur societies, the S.K.E.C. and the K.V.A.C., recently merged into one common society, the *Ceskoslovenski Amateri Vysilaci*. In the December Calendar of the Union,

the C.A.V. was proposed for membership from Czechoslovakia. If existing members accept this proposal, it means that united national amateur action has again functioned to strengthen amateur radio internationally.

Not yet formally proposed, the application of the *Latvijas Radio Biedriba*, as Union member from Latvia, is now in correspondence and being given formal consideration.

Two amendments to the I.A.R.U. Constitution have been voted by the membership, as announced officially in the December Calendar. Section 6 of Article IV was amended to provide for the submission of annual reports by member-societies not later than December 15th of each year. Section 3 of Article IV was amended to provide that actions of the Union, except amendments to the Constitution, are to be determined by a majority of those members voting within five months after the date of the proposal, provided at least half the membership has voted. As a part of this amendment, Section 3 of Article II was amended to conform.

QSL:

The following corrections to the QSL Bureau list beginning on page 55, February *QST*, are to be noted:

In New Zealand, the annual change in headquarters location has caused the transfer of QSL activities from the N.Z.A.R.T. at Box 25, Ashburton, to: N.Z.A.R.T., Box 517, Dunedin, New Zealand.

The N.V.I.R.'s QSL address, as distinguished from the headquarters address, is not Post Box 150, The Hague, but remains: N.V.I.R., Post Box 400, Rotterdam, Netherlands.

One addition to be made to the list, that of a QSL Bureau for Lithuania (LY, and old RY)

being conducted by the Lietuvos Radio Mege jai. The address: L.R.M., Post Box 100, Kaunas, Lietuva (Lithuania).

The Czechoslovakian QSL address has been changed from the C.A.V. headquarters address, Post Box 531, Praha II, to that of QSL Manager Alois Weirauch, and is as follows: C.A.V., Post Box 69, Praha II, Czechoslovakia.

The confused address given for Argentina in February *QST*, the result of a mistake in last minute change via inter-office mail, should be



MISS AUSTINE MARSHALL, VK3YL, AUSTRALIA'S YOUNGEST YL, AND THE TRANSMITTER WITH WHICH SHE TOOK FIRST PLACE AT THE MELBOURNE RADIO EXHIBITION

WAC on less than 15 watts, the only YL to have passed the A.O.C.P. exam, VK3YL upholds the finest Aussie amateur tradition.

disregarded and the following address used: Radio Club del Argentino, Rivadavia 2170, Buenos Aires, Argentina.

Kenneth S. J. Racombe, given as the QSL Bureau for Iraq, has left that country and is now variously reported as in Egypt or Palestine; in the latter country he uses the call ZC6KR. Cards for Iraq can be sent either through the R.S.G.B., or to L. A. C. Hamblin, YI6HT, Wireless Section, R.A.F., Shaibah, Baskra, Iraq.

New stations seem to be springing up in northern Africa every week or so. Some of the new calls are FF8SUD, FS3DJI (formerly UH1AA), CNSYBQ (Casablanca), and CN8RYO. It is impossible to keep up with the QRA's, which are usually secret and divulged only in confidence, anyway, but cards can generally be sent via F8RJ with fair assurance of their being delivered. The address is: Guy Grossin, Villa St. Jean, Savigny-sur-Aisne (Ardennes), France.

Tests:

Quite a number of 28-mc. tests are being and will be run off during coming months. In France, the Section Experimentale of the R.E.F. is conducting a series of tests during the week-ends of March and April. The test periods run from 1300 G.C.T. Saturdays to 2400 G.C.T. Sundays. North American stations are transmitting the first ten minutes in each even hour, other continents picking up succeeding periods in westerly rotation. This allows for ten minutes transmission

and 50 minutes listening on each continent. The odd hours are reserved for attempts at two-way communication.

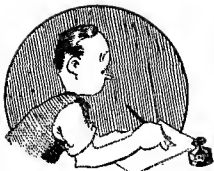
Baron P. D. Hoyningen-Huene, AC2BHH, Tientsin, China, is conducting receiving tests on this band for 15 minutes in every two-hour period from 0200 G.C.T. to 1400 G.C.T., every month on the 15th, beginning March. AC2BHH is also doing special listening on the 3.5-mc. band, in an effort to hear unusual DX. His receiving equipment is excellent, and he promises to QSL all stations heard. The time scheduled for this listening will be from 0830 to 0900 G.C.T., the 15th of every month.

G5FV, W2ACN, W2ALW, W6FPU and W2JN are among the stations actively testing on 28 mc. at the present time, although but little in the way of noteworthy results has so far been accomplished. Another active group is the Associated Radio Amateurs of New South Wales, Australia, of whom VK2FQ is a leader.

Plans for the R.S.G.B.'s 3.5-mc. tests during the first two week-ends in April are now being completed, reports J. Claricoats, Secretary of the R.S.G.B. International contacts on this band during the tests are earnestly desired, so stand by, 3500-ke. DX'ers.

General:

From the N.R.R.L., via cable: LMZ, the Norwegian R iser-Larsen Antarctic Expedition, will work on approximately 10 mc., listen for amateurs in the 14-mc. band No work will be done on 21.4 meters, as has been stated elsewhere The latest list from the S.R.A.L. shows 203 licensed stations in Finland — a splendid showing One by one the VK DX-men fall This time it's VK5JU, joined in double harness recently Interest in amateur radio in Sweden has increased enormously, says Erik Malmberg, Secretary of the S.S.A. A constant succession of tests is being run, stations are improving technically, numbers are growing The key to it all was the opening of the 3.5- and 1.75-mc. bands VO8MC is no more Rev. W. P. Stoyles was forced to abandon his well-known Newfoundland station upon his transfer to Mount St. Francis, St. Johns During February all Mexican telegraph operators went on a nationwide strike The Mexican Government promptly requested Mexican amateurs to handle the emergency traffic, radios F. Castro Herrera, Secretary of the L.M.R.E. The idea of an International Field Day, originally advanced by the R.S.G.B. in connection with their own national field day June 10th and 11th, is gaining momentum With the A.R.R.L. and other societies announcing supplementary plans for their members, full international co operation in making such a project a success is assured.



CORRESPONDENCE

The Publishers of QST assume no responsibility for statements made herein by correspondents

Bouquets

2522 Norfolk Road, Cleveland Heights, Ohio
Editor, QST:

December, nineteen thirty-two, another radio station is prepared to join the ranks of the "thirty thousand." Equipped with the most modern apparatus an erratic pocketbook can provide, it has nothing of interest to divulge.

Nevertheless, the builder and owner of this station, four short months ago knew as little of radio as the next man. Hearing in a school course a little of the phenomena of wireless, he journeyed to a near-by bookstore. Armed with numerous well-known radio magazines, he returned home thinking he had obtained all there was worth obtaining concerning radio station construction. But he was sadly disappointed. His progress was slow and stumbling, until by chance he fell upon the real article — QST.

Since then, advances have been rapid, until the final climax has been reached, and next month he is prepared to pass his operator's license exam.

The point of this letter, as it may be clearly deduced, is in praise of QST. True praise as the writer has fully realized is hard to get no matter how much the individuals are deserving it, and it is with this thought that he is complimenting QST and its supporting Handbook, without which no person can expect to reap full benefits of amateur radio. Suggested as a new simile for 1933: As superior as QST is over its competitors.

— Frank Fretter White

Carelessness

20 N. Ashland Blvd., Chicago, Ill.

Editor, QST:

A recent newspaper item telling of the death of a youth who was tinkering with a supposedly harmless radio set brought to mind the oft repeated warnings in our magazine, QST, about the hazards underlying the handling of radio equipment. I wonder if the boys really realize the danger they are exposed to whenever they enter the operating room?

At present I am attending a college of physicians, and the results of the burns and shocks to which we hams so often pay little attention impress me greatly. By virtue of human nature we are possessed with a variable amount of carelessness, but why can't we use the old cranium and minimize these dangers?

Some individuals can safely pass quite a bit

of current through their bodies and show no ill effects; others "jump" when a "B" battery gets mixed up with their anatomies. The reasons are, first: the conductivity of the skin, which depends upon moisture, oils and thickness of the skin, and second: the subject's irritability to electrical stimulation.

We therefore see that many factors are involved in the extent of our injuries. Of course the frequency is important. Sixty cycles, for instance, does not recognize the skin effect law to a great extent and has a knack of penetrating the deeper layers.

The results of shock may be injury of tissue, both muscular and that of the organs, or it may involve nerve tissue. Sometimes a severe shock may injure remote structures. Electrical burns are sometimes deep and painful, requiring long recuperation, and leave nasty scar tissue.

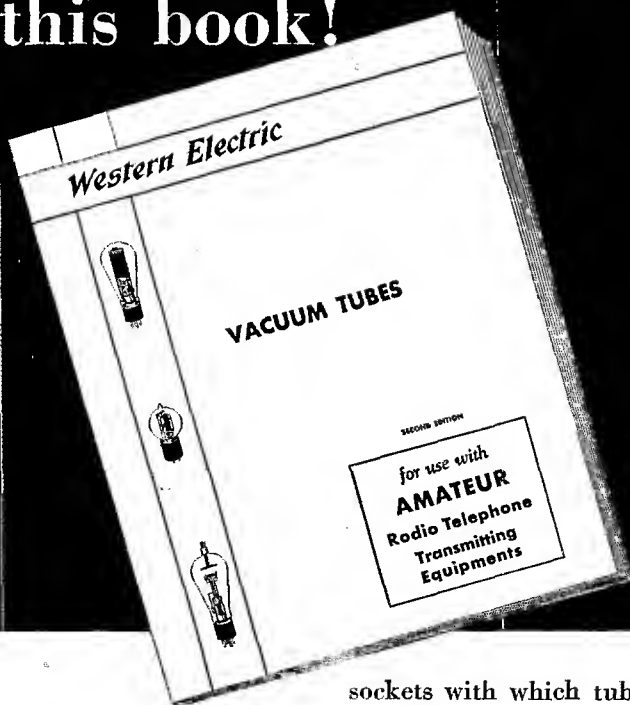
Not so long ago, I had the "pleasure" of utilizing my own six-foot one as an instrument of power consumption with a potential energy of five hundred volts. Outside of a good shaking up I was still able to copy ten w.p.m. Not long after, I worked over a chap who came in contact with the same voltage and equipment but who was unfortunate enough to have received the full force of the current fatally. It is the old story of difference in contact.

The following rules may be of some help toward a neater station, greater safety and many years of DX:

1. Ground every piece of cable with voltage in it.
2. Install a double-pole line cut-out switch and use it! Although there may be no current flowing to the transformer, contact with the line and a ground connection may cause death. Single-pole switches may leave the "hot" side just where you don't want it.
3. Ground all power and filament transformers. Insulation leakage may put the plate voltage on the frame and the entire works above ground.
4. If using the "one hand" method for testing where the power cannot be shut off be sure the feet and rest of the body are away from grounds.
5. Keep the high-voltage power supply off the floor and rest the feet on something more comfortable.
6. Last but not least, high voltage utilities lines absorb r.f. and also become peeved when they see a No. 14 antenna wire striving to attain higher spheres.

— Ed. Johnstone, W2CBM

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We invite you to inspect the FB-7 and to compare it with any other H. F. Receiver on the market. We are confident of your approval, for by every nicety of design and mark of fine craftsmanship, the FB-7 reveals its heritage from the "AGS."

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Single Signal Reception, the new and important advance in communication engineering, has proved to require X-cut resonator crystals of special selection for best results. Some crystals — either X or Y cut — which are perfectly satisfactory oscillators may still be quite useless as resonators or "mechanical filters."

NATIONAL Company laboratories have developed special equipment for the selection of crystals to meet the peculiar requirements of Single Signal Reception. All FB-X Single Signal receivers are furnished complete with such crystals.

The FB-X is the standard FB-7 to which has been added the crystal (in dust-proof plug-in holder), the adjustable phasing condenser, the split rotor selectivity control variable condenser, the "series-parallel-out" switch, and the knob-adjusted beat frequency control, so as to provide for true Single Signal operation.



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- Separate Oscillator for CW beat frequency giving "semi-single signal" or "offset" tuning.
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- Class A Power Pentode Output.
- R-39 Coil Forms with grounded metal shield handles.
- Band Spread Coils available for 20, 40, 80, and 160 meter amateur bands, each covering 100 full dial divisions.
- Standard coils for continuous coverage from 20 MC to 1500 KC.
- No frequency drift.
- Double Shielding.
- May be used with either conventional antenna or "doublet" with transposed transmission-line lead-in.

THE CHASSIS

- Single Control Tuning. (No trimmers.)
- Full Vision Dial with SFL 270° condensers.
- Front-of-panel coil changing, without disturbing shielding.
- CW Beat Oscillator Switch on panel.
- Front of Panel Switch for "cutting" B voltages during transmission.
- Phone Jack, connecting ahead of final audio stage.
- Calibrated Volume control located under tuning knob, for one hand operation.
- All fixed adjustments, such as I. F. peaking, accessible from top without removal of chassis from cabinet.

SINGLE SIGNAL OPERATION

- Both the circuit and the chassis layout have been designed for ready addition of mechanical filter (quartz crystal) when desired for full "single signal" operation.

THE POWER SUPPLY

- May be operated from a filament transformer and B batteries, the new National 5887 low price Power Supply, or the standard National 5880 Power Supply (as used with the SW-3), R. C. A. Licensed.

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Q-4-33



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Tube checker and Analyzer is recommended*

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Rotten Signals : How to Cure Them

(Continued from page 15)

SOME OTHER THINGS

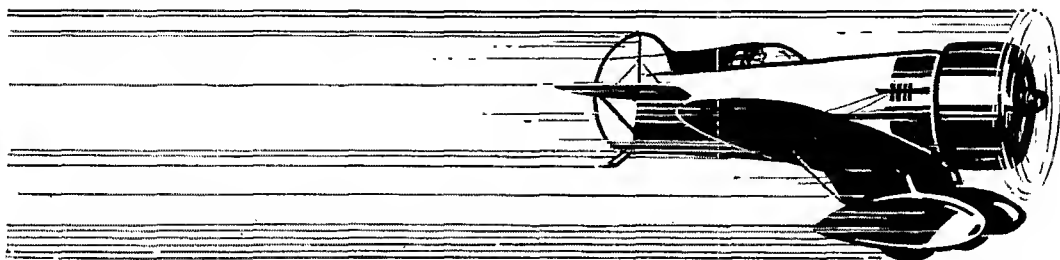
Even after these four causes of instability have been given the right kind of attention, it is still possible to have a modulated and chirpy signal if the r.f. is not kept where it belongs. Chokes sometimes do not do their duty as they should, allowing r.f. to get into the power supply, which certainly is not helpful. Sectional slot-wound chokes, sectional honeycombs, and plain single-layer chokes all are good when they have low distributed capacity and have no resonance spots near the amateur bands. A neon bulb is still about as good as ever for testing a choke. If the bulb glows when touched to the supposedly "cold" side of the choke some experimenting is in order. A poor choke decreases the efficiency as well as sometimes being responsible for a poor note.

But r.f. in the power supply is not always a sign of a poor choke. Direct pick-up of r.f. from the oscillator circuit is often more than just a possibility. Power supply leads to the tube should be kept out of the r.f. field as far as possible. Shielding the leads when they come near the oscillator is worth while if the shielding is connected back to the filament-center-tap at the filament by-pass condensers. A ground on the center-tap is advisable if it is short. At 14,000 kc., however, a ground lead sometimes does more harm than good if it approaches a quarter wave in length — a matter of but sixteen feet. The only way to find out is to try it, using the neon bulb and monitor.

Under certain conditions there may be no sign of r.f. in the supply leads with the antenna disconnected, but it appears immediately when the oscillator is delivering power. This is the result of pick-up from the coupling system. It is particularly likely to occur with parallel feeder tuning because of the high voltage at the transmitter end of the feeders with that tuning system. If this happens, move the supply leads out of the field of the antenna coil and feeders or add enough length to the feeders so that series tuning can be used. With series tuning the voltage at the coupling coil and at the transmitter end of the feeders will be low and the electrostatic coupling consequently less.

This brings up the subject of antenna coupling. The right degree of coupling is almost automatically settled if the tube is not going to be overloaded. Simply use the loosest coupling that will make the tube draw its rated plate current with the antenna or feeders tuned to resonance. The character of the note and the keying should be checked in the monitor when the antenna coupling is being adjusted. So long as the monitor says the note is good the coupling may be increased and more power taken from oscillator, for after all it is the signal that is the important thing and not the method of getting it. Put the antenna coil at the "cold" end of the tank for close coupling. Take as much out of the set as you can — but use the monitor constantly.

After all, it's
PERFORMANCE
that "brings home the bacon"



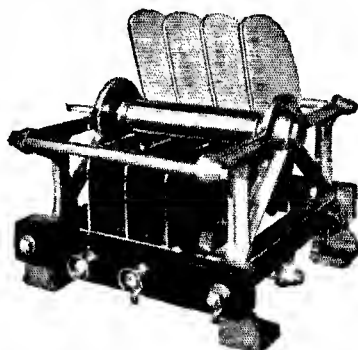
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The remaining member of our four transmitter divisions is the power supply. A good power supply — well filtered, and having good regulation — is always desirable with any transmitter; it is absolutely essential with a self-excited set. A poorly-filtered supply cannot possibly produce a d.c. note. And if the regulation is poor the signal is bound to be chirpy, because in spite of all the things we may do to improve the dynamic stability of the oscillator there will still be some frequency change with changes in plate voltage. Use a separate filament transformer so that keying will not affect the filament voltage. There is only one way to get good regulation in the plate supply — use a filter with choke input and put in a bleeder which will drain off about 10% of the total current to be taken from the system. Besides having the advantage of good regulation a choke-input filter decreases the peak rectifier current, which increases the life of the rectifier tubes and makes it possible to draw considerably more output current from the transformer and rectifier than is possible with condenser input. The only disadvantage is that the output voltage is lower than with condenser input at light loads, a disadvantage that rapidly disappears as the load increases and which in the end turns out to be helpful because it cuts out a lot of the strain on the filter condensers. If you have only one filter choke put it next to the rectifier tubes and parallel all your filter condensers on the output side. The filtering will be just about as effective either way. And don't forget the bleeder.

None of the things we have pointed out above are hard to do, in fact, it is no trick at all to get a thoroughly satisfactory note simply by paying attention to details. Possibly it may be necessary to sacrifice a little power output to get a good signal, but that is of little consequence. It takes a big change in power to make an appreciable difference in signal strength, and the small amount that is used up in the interests of having a 1933 signal will never be missed. Neither will the r.a.e. hash the good signal replaces.

Cutting the Cost of Single-Signal Reception

(Continued from page 12)

The second detector grid leak and condenser also should be in the transformer shield, as shown in Fig. 2.

SECOND DETECTOR AND BEAT OSCILLATOR

The second detector used and recommended is a power pentode of the indirectly heated cathode type, such as the 2A5 or 59 for 2.5-volt filament supply, or a 42 for 6-volt supply. The reason for using this type of detector is that it gives real audio power output, enough to work a speaker on the stronger signals. The output obtained is approximately equivalent to what is usual with an ordinary detector and a good audio stage. Preliminary experiments with pentodes showed that grid-leak detection gave much greater sensitivity and output than bias detection, and also showed that the power pentode gave considerably

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better output than other types of tubes tried, which included the duo-diode triode 55.

Since the detector plate current is quite large (25 ma. or so at no-signal maximum, with 200 to 250 volts on the plate), an output choke or transformer is necessary. The arrangement shown uses an inexpensive output transformer of the broadcast receiver "replacement" type, intended to couple a pair of pentodes push-pull to a dynamic speaker. For headset output, a connection is made through a 1- μ fd. condenser to the center-tap on the primary, the other 'phone terminal being grounded. This makes the 'phone terminals safe to touch, incidentally. If a high-impedance type speaker is to be used, it can be connected to the 'phone terminals or a transformer with a secondary intended for magnetic speakers can be used.

To reduce undesirable plate detection and to give convenient coupling to the beat oscillator, the r.f. choke in the screen (accelerator) grid circuit, backed up by the audio by-pass condenser, should be used as shown. A series resistor drops the screen voltage, to hold plate current to 25 ma. or so. The plate of the electron-coupled beat oscillator is tied to the detector screen grid so that the oscillator plate receives its d.c. through the grid choke and resistor. This is a convenient and satisfactory method of coupling the oscillator into the detector and gives good heterodyning without critical adjustment.

The beat oscillator circuit is similar to that previously described for the S.S. superhet, having a small tuning condenser in parallel with a "set" large section. The control of the smaller condenser is brought out to the panel for handy beat-note adjustment. The larger section may be a single variable condenser or a variable in parallel with a fixed mica condenser, as used in this receiver. Both the tuned circuit and the r.f. leads to the grid of the tube, and to the detector, must be well shielded to prevent the oscillator output from getting into the front end. The effectiveness of the shielding can be checked by tuning the oscillator to resonance with the i.f. circuits. If it causes a "squawk" or blocking, more isolation or a reduction in oscillator screen voltage is in order. Complete enclosure of the oscillator was deliberately omitted in constructing the model shown, although it had been used in the first receiver, to see what could be done without it. But it had to be partitioned off later. The shielding for the various leads is Belden braid slipped over the insulated conductors.

LINE-UP AND ADJUSTMENT

Checking the operation of the high-frequency circuits is the same as for any superhet and should be carried out as directed in the instructions for the S.S. receiver, given in the August, 1932, article. Lining up the i.f. circuits is generally according to usual practice, the procedure given in the September, 1932, article being recommended. The c.w. beat oscillator could be used as the i.f. signal generator, although a separate oscillator using the same circuit and constants is more satisfactory. The outline of the step-by-step

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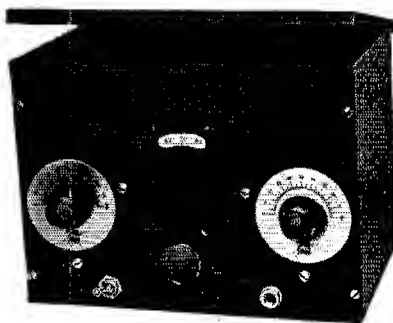
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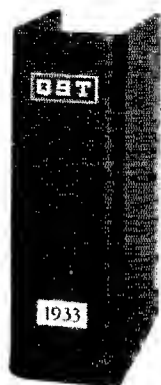
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procedure using a separate test oscillator is as follows:

1. Tune the test oscillator to about 525 kc., by checking against a broadcast receiver tuned to the extreme low-frequency end of its tuning range.

2. With 'phones connected to the output (and with a 0-50 or 0-100 milliammeter connected in the detector plate lead, if one is at hand), loosely couple one end of an insulated lead to the test oscillator output and loop the other around the grid lead of the i.f. tube. Set the regeneration control at minimum (shorting the tickler). The beat oscillator should be "off."

3. Tune the primary and secondary of the second i.f. transformer to resonance as indicated by hiss in the phones or by *minimum* in second detector plate current. (Plate current drops with grid detection.)

4. Transfer the oscillator coupling lead to the grid of the first detector and tune primary and secondary of the first i.f. transformer in the same fashion.

5. Now tune in a ham-band signal from a steady local oscillator, say the crystal stage of the transmitter or the frequency meter. Turn the regeneration control full on. Make the final adjustment of the tickler coupling, setting it at the point where the i.f. just spills over into oscillation. Before doing this, it would be well to smear collodion on the form so that the tickler will become fast in the final position without further disturbance.

6. Very carefully touch up the tuning of the first and second i.f. stages so that the i.f. is just on the verge of oscillation, as will be indicated by the characteristic ringing sound in the 'phones. Adjust the selectivity control if necessary.

7. Switch on the beat oscillator and set it so that the beat note is of the desired pitch, with the signal tuned in right "on the nose." Reduce the sensitivity by backing off the gain control, if necessary, so that the signal does not overload the i.f. stage to block it or throw it into oscillation. If oscillation starts, back off on the selectivity control also. When the "on-the-nose" adjustment seems satisfactory, tune the receiver through zero beat and check the ratio of the signal on the peak to the signal on the image. If the adjustments are correct, the ratio should be something like R_9 to R_1 or R_2 . The image should be barely audible.

Do not expect to get the full measure of performance at the first trial. As with every piece of radio gear, realization of the maximum performance comes with familiarity and experience in handling. Go over the adjustments until you are completely familiar with the thing.

In operation, it will be found that full sensitivity of the receiver will seldom be required for headset reception. It also will be found that adjustment of the selectivity and gain controls go together; when the gain is reduced, the selectivity control will need backing off too, and *vice versa*. The reason for this is that increasing the grid bias on the first detector, which occurs when the cathode resistance is increased to reduce its gain,

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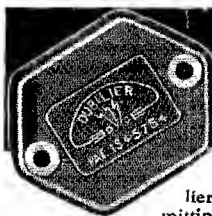
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causes the detector plate resistance to increase. This, in turn, reduces the positive resistance in the regenerative circuit and tends to increase regeneration. The interlocking of these two controls is no inconvenience, however, especially if both are connected so that their rotation is corresponding. That is, the resistance of the regeneration control should increase as that of the gain control decreases, for the same direction of rotation.

The high r.f. selectivity obtained is not only useful for c.w. but, as in the case of the first S.S. receiver, is extremely useful for 'phone reception as well. As was suggested in the previous article on filter adjustment, intelligibility is all that is necessary. Sideband cutting to the point where intelligibility is lost is an asset rather than a liability, since interference that would ruin intelligibility anyway is cut simultaneously. It is surprising to what extent high r.f. selectivity can be carried in 'phone reception, let arm chair theorists say what they may. Try it on 'phone and find out for yourself.

WHAT IS SINGLE-SIGNAL SELECTIVITY?

In comparing the performance of this receiver to that given by other superhets, it is necessary to have in mind a definite picture of what we mean by single-signal selectivity. Stated briefly, single-signal selectivity is that order of radio-frequency selectivity which virtually eliminates audio-frequency image response in c.w. reception. It means that an equal signal giving the same beat note pitch as the resonance frequency signal, but having a frequency different from resonance by twice the beat frequency, can cause no appreciable interference. It does not mean that the response to the desired signal can be just somewhat greater than the image response. There must be a tremendous difference between the two. In quantitative terms, the image response should be at least 40 db down, barely audible when the peak is R9. To our knowledge, at the present time the only receivers that give this kind of performance are those patterned after the original S.S. model (using the quartz filter) and the present one using the regenerative i.f. amplifier. Receivers of the "straight" superhet type that we have examined, while they give an "approach to single-signal selectivity," do not give true s.s. selectivity as we understand it.

As we conceive it, the true s.s. type receiver can be identified by the following features:

1. Controllable r.f. selectivity such that response at least 40 db down can be obtained at 2 kc. off resonance. With not more than two transformer-coupled i.f. stages of usual frequency, this order of selectivity is practicable only when there is a high-selectivity single circuit such as a piezo-electric (quartz) filter or one using negative resistance (regeneration or dynatron action).

2. Overall stability commensurate with the high selectivity.

3. A separate oscillator coupled to the second detector to beat with the intermediate frequency for heterodyne c.w. reception. An autodyne (oscillating) second detector, for instance, would not

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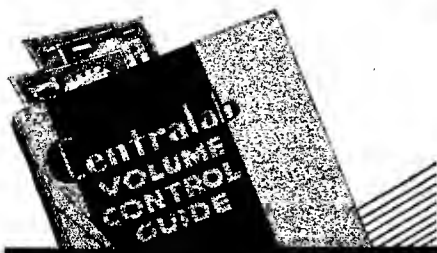
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serve, for the reasons given in the June, 1932, article on receiver selectivity.

In general, the receiver just described comes up to these requirements. However, it has its limitations in comparison with the previous model using the quartz filter, as was pointed out in the beginning. The regenerative circuit is inherently less stable and the range of selectivity is limited. Also, the selectivity and sensitivity are interdependent, whereas they are practically independent with the quartz filter. On the other hand, at maximum selectivity the receiver using regeneration has much greater gain for the number of stages used. This receiver has sensitivity corresponding to that of the usual superhet having two i.f. stages, a decided economic advantage. A minor advantage for the regenerative i.f. is that there is but one resonance hump, in contrast to the several that are possible with the quartz filter.

If it could be afforded, the more elaborate and more flexible type of S.S. receiver using the quartz filter would be preferable. But where something costing over 100 dollars is out of the question and something calling for an outlay of under 50 dollars is within reach, the regenerative rig takes first place. We like it, and believe you will too.

The Cruise of the "Northern Light"

(Continued from page 19)

the secondary of the plate transformer burned out while we were going from Suva to Sydney. The secondary was rewound from wire from long wave coils.

We had traveled 7,770 miles from San Francisco to Sydney and had been gone 81 days. We anchored at Kirribilli, in Sydney harbor. VK2JH lived only a short distance from the landing jetty. He and VK2HR were publishing the first edition of "QSO." VK2NR kept us in touch with America, KGEG being off the air in port.

At Sydney we made some antenna changes and added a 600-meter coil for the short-wave transmitter. The circuit was changed from t.p.t.g. to series feed Hartley in order to operate on 600. Two 852 tubes were put in parallel and the set worked well on all waves.

We went from Sydney to Brisbane and then across to Wellington, New Zealand.

The trip to Wellington was very rough, the radio shack being flooded to a depth of six inches one day. There was salt water in the transmitter, and worse luck, salt water in my SW-5. But after a washing in fresh water and a drying in the oven, everything worked again. On a wet and windy day, we arrived in Wellington harbor with our main boom broken and everyone in the lowest of spirits. I was homesick.

The *Northern Light* hadn't been alongside the pier long before ZL2FP and some others came to cheer me up. They were successful.

From Wellington to Auckland. More hams — ZL1AR, ZL1AN and others too numerous to mention. New Zealand is an excellent place for DX. KFI, Los Angeles, came in with loudspeaker

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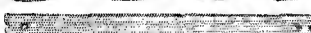
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volume on the short-wave set with long-wave coils plugged in.

Lyttleton, the port for Christchurch, was our next stop. A gang of the 3rd district fellows came over to the dock led by ZL3CC. Another fine time was had by all!

Dunedin was our final port of call on the schedule of violin concerts in New Zealand. In the harbor at Dunedin the W8's came in on 20, 40 and 80 meters. W8DFE and W3BFH were QSA5 on 80. ZL4AO, of Byrd expedition fame, was working a schedule each night with England on 40. The gang held an impromptu meeting at Peggy and Ewen Cameron's (ZL4CL and ZL4BJ respectively) home. I was glad I was a ham, since being one brings such welcome friends in foreign lands.

We crossed the Tasman Sea again and went south from Sydney to Melbourne, Australia. VK3YX, VK3WG and VK3YL made things interesting, which included a loop and tailspin in the club's radio equipped 'plane. VK3WG made a crystal controlled monitor for KEGG. The gang down there nearly all have crystal control, D.C. Back to Sydney once more, and, oh, what a trip! Eight days it took us to make the 580 miles. Our bearings burned out, and exhaust caught fire. VK2JO and a passenger ship kept watch on our wave, we were in danger for a while.

On December 12, 1931, we left Sydney for the Dutch East Indies. On the way up through the Great Barrier Reef, we passed the weather bureau island where VK4SK is isolated for two years.

We made many stops around the islands to the north of Australia and in the Dutch East Indies, Bali being the most interesting one. A powerful Russian station just inside the band was causing lots of trouble. W6HM and W6UC pushed through with the best W signals and carried through almost to Ceylon; W6HM gave the last message as we lost contact with California.

A visit to VS1AB at Singapore was especially interesting, he having visited W6HM a few years ago. VS1AB's 50-watt 'phone on 7000 kc. carried all the way to W6HM at Carmel and W6CZX at Monterey, where friends and relatives heard our voices for the first time in many months.

At Jeddah, in the Red Sea, W2, W3, W4 and W5's started to come in around the other way, the fours mostly. No more hams were visited, because we kept off the beaten track.

Cruising through the Mediterranean Sea from Port Said, we visited Yugoslavia, Greece and Sicily.

W2CJR held the sked all the way across the Atlantic. He QSP'd the traffic by telephone to the owner's mother and we had replies in a few minutes.

Thousands called KEGG on the Atlantic, but the radio operator was also on duty in the engine room and frequent oilings made it necessary to cut the QSO's short.

We finished the trip at New York after traveling 36,000 miles in 15 months.

Oh, yes, Ken Hiler, W2CJR, came aboard the

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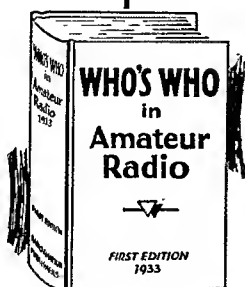
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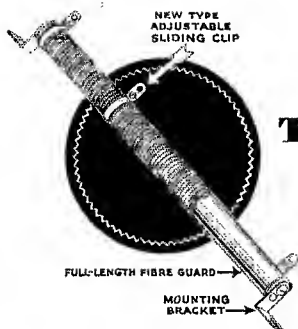
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Northern Light at the New York Yacht club on the East River when we arrived and figuratively gave me the telegraph key to New York.

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Apr. 2,	C	W1XP	May 3,	A	W1XP
Apr. 5,	A	W1XP	May 5,	B	W9XAN
Apr. 7,	B	W9XAN		B	W6XX
	B	W6XX	May 10,	BB	W1XP
Apr. 12,	BB	W1XP		C	W9XAN
	C	W9XAN	May 12,	B	W9XAN
Apr. 14,	B	W9XAN		A	W6XX
	A	W6XX	May 17,	B	W1XP
Apr. 19,	B	W1XP		BB	W9XAN
	BB	W9XAN	May 19,	BB	W6XX
Apr. 21,	BB	W6XX		A	W9XAN
	A	W9XAN	May 20,	BX	W6XX
Apr. 22,	BX	W6XX	May 21,	C	W6XX
Apr. 23,	C	W6XX	May 26,	A	W6XX
Apr. 28,	A	W6XX	May 28,	C	W1XP
Apr. 30,	C	W1XP	May 31,	A	W1XP

STANDARD FREQUENCY SCHEDULES

Evening Sched. and Freq. (kc.)			Afternoon Sched. and Freq. (kc.)		
Time (p.m.)	A	B	Time (p.m.)	BB	C
8:00	3500	7000	4:00	7000	14,000
8:08	3600	7100	4:08	7100	14,100
8:16	3700	7200	4:16	7200	14,200
8:24	3800	7300	4:24	7300	14,300
8:32	3900		4:32		14,400
8:40	4000				

Time
(a.m.)

Sched. &
Freq. (kc.)
BX

6:00 7000
6:08 7100
6:16 7200
6:24 7300

The time specified in the schedules is *local standard time* at the transmitting station. W1XP uses Eastern Standard Time, W9XAN, Central Standard Time, and W6XX, Pacific Standard Time.

TRANSMITTING PROCEDURE

The time allotted to each transmission is 8 minutes, divided as follows:

2 minutes—QST QST QST de (station call letters).
3 minutes—Characteristic letter of station followed by call letters and statement of frequency. The characteristic letter of W1XP is "G"; that of W9XAN is "O"; and that of W6XX is "M."

1 minute—Statement of frequency in kilocycles and announcement of next frequency.

2 minutes—Time allowed to change to next frequency.

THE TRANSMITTING STATIONS

W1XP: Massachusetts Institute of Technology, Round Hill Research, South Dartmouth, Mass., Henry G. Houghton in charge.

W9XAN: Elgin Observatory, Elgin National Watch Company, Elgin, Ill., Frank D. Urie in charge.

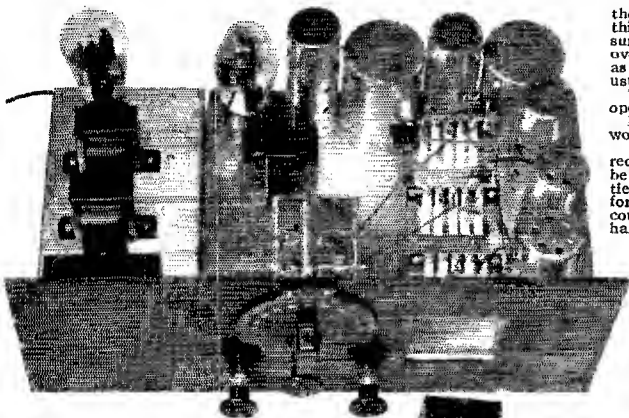
W6XX: Don Lee Broadcasting System, Los Angeles, Calif., Harold Peery in charge.

REPORT BLANKS

Blanks for reporting on the S. F. transmissions will be sent postpaid upon request. Just send a card or message to Standard Frequency System, *QST*, West Hartford, Conn., asking for s.f. blanks.

The HAM SUPER

MAKES ZEDDERS AND AUSSIES R7-R8 IN EARLY EVENING



Already the new Ham Super is making records for other ham receivers to shoot at — and it was introduced only last month. Read a bit of what 9C7E, George Miller of Chicago says of it after two weeks' operation:

"The new Ham Super is undoubtedly the best receiver for sensitivity, selectivity and single signal tuning that I ever heard of used. Its performance is remarkable on all Amateur frequencies, hand-spread or coverage, CW or tone, and it is a real pleasure to carry on communication with such reliability, without the usual QRM and heavy background interference so common to most receivers today.

The sensitivity is so high that I bring in New Zealand and Australian stations much earlier in the evening and with more signal strength. Some of

their R7-8 signals could easily be mistaken for stations on this continent before they give their call letters. Another surprise was to hear west coast stations fairly consistently over a period of two weeks up until 10:30 A.M. (C.S.T.) and as early as 3 P.M. (C.S.T.) on 7 megacycles — rather unusual reception for this frequency band.

That novel idea of changing frequencies is such an easy operation and works great.

I am thoroughly satisfied. It does all that you said it would."

If you want a really advanced, up-to-the-minute Ham receiver, find out about the Ham Super. Good? — it's got to be good to do that, and it was designed by amateur authorities for whom you have the greatest respect. Send in a stamp for complete details of the Ham Super, the new electron coupled frequency meter-monitor (all A.C.) and other hot ham transmitting and receiving specialties.

LAST MINUTE SPECIAL

A new and compact all A.C. electron coupled frequency meter and monitor combined. It covers all Ham bands and is only 6" square. And the price? — depression low.

MCMURDO SILVER, INC.

1136 W. Austin Ave.

Chicago, Ill.

McMURDO SILVER, INC.
1136 W. Austin Ave., Chicago, U.S.A.

Enclosed find 3c stamp for which send me details of the Ham Super and all amateur apparatus.

Name

Address

Town

State

FUSSY HANDBOOKS for FASTIDIOUS PEOPLE

The regular 10th Edition of the Radio Amateur's Handbook in cloth binding with gold lettering. \$2.00 postpaid anywhere.

AMERICAN RADIO RELAY LEAGUE
West Hartford, Connecticut

LOW RANGE FUSES

- *Littlefuses for Instruments:* Amps.: 1/100, 1/32, 1/16—20c ea. 1/8, 1/4, 3/8, 1/2—15c ea. 1, 2—10c ea. For milliammeters, ham rectifiers, etc. Use 1/8 for radio B circuits. *High Voltage Littlefuses:* 1000, 5000, 10,000 volt ranges in 1/16, 1/8, 1/4, 3/8, 1/2, 3/4, 1, 1 1/2, 2 amps. Renewable. Price 35c to \$1.25 ea. **NOW—\$100 PROTECTION GUARANTY.** Get New Cat. #5.
- **LITTELFUSE LABS.** 1784 Wilson Ave., Chicago

"Quicker than a Short circuit" **LITTELFUSES**

A CONDENSER MICROPHONE

at the right price

For broadcasting and P A installations where high quality reproduction and sensitivity are desired.

Model S-2
\$65.00 LIST

Handsome crackle enamel finish. Comes complete with 2 stage amplifier and 25 ft. cord.

Actually more sensitive than other types and performs better than the carbon type microphone.

Get our latest Catalog on Sound Equipment, Microphones and Accessories.

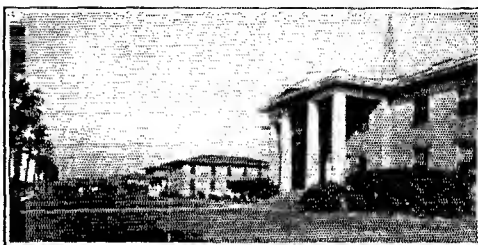
SOUND ENGINEERING CORP.
416 N. Leavitt St. Chicago, Ill.



Your call letters on a heavy bevelled glass plate 9" x 3". Silver colored letters 2" high. Holes drilled for mounting.

\$1.00 Add postage 2 lbs.

WILLIAM H. SCHICK—W2MU
135-44 Kew Gardens Rd., Richmond Hill, N. Y.



In 3 to 7 months we train you to secure government license. Course consists of Wireless Code, Radiophone, Microphone-Studio Technique, Television, Service, Police, and Aeronautical Radio. We are authorized to teach RCA Institutes, Inc., texts. Return coupon for details.

Name

Street or Box

City and State

PORT ARTHUR COLLEGE

PORT ARTHUR, TEXAS

QST OSCILLATING CRYSTALS

"Superior by Comparison"

WHY YOU SHOULD USE SCIENTIFIC RADIO SERVICE CRYSTALS

- 1 Since 1925, we have been specializing in producing Piezo Electric Crystals exclusively.
- 2 Since 1925, Scientific Radio Service Crystals have stood the test and are recognized the world over for their Dependability, Output and Accuracy of Frequency.
- 3 Since 1925, owners of Broadcast and Commercial Short Wave stations have found that no chances can be taken in getting the cheaper grade of crystals and that invariably they call on Scientific Radio Service for the Best.
- 4 Since 1925, we could be depended upon to make Prompt Shipments. This coupled with a crystal Second to None considering Output and Accuracy of Frequency has earned during these years a reputation which we jealously guard. Therefore, Get the Best.

Price list sent upon request

SCIENTIFIC RADIO SERVICE

"The Crystal Specialists"

124 JACKSON AVENUE, UNIVERSITY PARK
HYATTSVILLE, MARYLAND

METERS

New and Used

WESTON ■ WESTINGHOUSE ■ G. E.

NO OTHER MAKES

MILLIAMMETERS — All ranges from
0-50 to 0-500 — New — Bakelite
Cases — Projection Panel Type 3 1/2"
\$2.00 each

MICROAMMETERS — 0-1000 — Square
Case — Laboratory Type, New
\$4.25 each

R. F. AMMETERS — THERMOCOUPLE
0-1-3-6-8 Amps, New \$3.50

- OTHER METERS AT
PROPORTIONATE PRICES

KALTMAN & KENNYHERTZ

62 Court Street

Newark, New Jersey

ALL POSTPAID

NO C. O. D.'S

WWV 5000-KC. TRANSMISSION

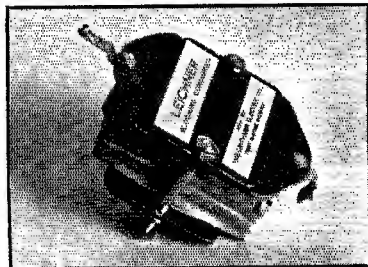
The 5000-kc. transmissions of the Bureau of Standards station, WWV, are given every Tuesday continuously from 12:00 noon to 2:00 p.m., and from 10:00 p.m. to midnight, E.S.T. The accuracy of these transmissions is to better than 1 cycle (one in five million).

— J. J. L.

New High-Frequency Blocking Condensers

A NEW group of high-voltage fixed condensers for blocking and r.f. coupling, using flint glass as the dielectric, has recently been brought out for amateur use. It is claimed that the dielectric losses in the new types are much lower than in mica condensers of the same capacity. The photograph shows one type of construction.

To prevent trapping of air bubbles between the metal and glass plates of the condenser, the glass plates before assembly are coated with a wax compound; after assembly the unit is heated



above the melting point of the wax and placed under pressure, forcing out the air and surplus wax. Air bubbles, if allowed to form, permit corona discharge with a resultant loss of efficiency and possible danger of dielectric failure.

The condenser shown in the photograph, known as the Type A3, is rated at 5000 volts and will carry 0.5 amp. at 56 megacycles. It is made in the following capacities: 75, 100, 150, 200 and 250 μ fd. Two other types, the A1 and A2, are of similar construction but are completely enclosed. In the Type A1 capacities up to .0025 μ fd. can be obtained; in the Type A2, up to .00125 μ fd.

The condensers are manufactured by the Lechner Electric Company, Fort Wayne, Ind.

~~Lechner~~ Strays

When amateur exams were held in Houston recently, the place was the civil service room in the post office, but since the building was undergoing some construction the air was pretty well filled up with the deafening rattle of pneumatic riveters, hammers, etc. After an unsuccessful attempt to hear the buzzer, several hams asked to be allowed to move closer to the R. I.'s desk.

"What!" said the R. I., "you call yourselves hams, and you can't copy through that!!!"

PROUD OF IT?



ARE you proud that you are an amateur — proud of your A.R.R.L. membership? Then proclaim it! Let the hams who meet you on the street, in the radio store, or traveling, know it. Wear your A.R.R.L. emblem! The distinctive League emblem comes in three different forms. Its use by members is endorsed and encouraged by the League. Every member should endeavor to display the insignia of his organization in every possible way.

THE PERSONAL EMBLEM, in extra-heavy rolled gold and black enamel, just $\frac{1}{4}$ " high, supplied in lapel button or pin-back style, is recognized as the sign of a good amateur. Wear your emblem, and feel proud of having taken your rightful place in the radio fraternity. Either style, \$1.00, postpaid.

THE AUTOMOBILE EMBLEM, heavily enameled in yellow and black on sheet metal, will gain you friends. On the road, traveling, it identifies you as a real amateur. $5 \times 2\frac{1}{4}$ ", holes top and bottom. 50c each, postpaid.

THE EMBLEM CUT, a mounted printing electrotpe, the same size as the personal emblem, is for use by members on amateur printed matter, letterheads, cards, etc. \$1.00 each, postpaid.

Emblems for Communications Department Officials, $\frac{3}{8}$ " size, \$1.00 each.

Special red color for the S. C. M. . . . Special green color for the Route Manager. . . . Special blue color for the Official Relay Station appointee.

Note: Red and green colors in pin type only. Blue emblem available both in pin and lapel button types.

The American Radio Relay League
West Hartford, Connecticut

NEW SUPER-HET NATIONAL

Get the dope, fellows. A wow! And a bargain!
Designed for amateur needs.

IF IT'S NATIONAL WE HAVE IT
HATRY & YOUNG 203 ANN ST., HARTFORD

WE BUILT AND INSTALLED

W9USA COMPLETE!

ALL W9USA PARTS CARRIED IN STOCK

Write for our bargain bulletin

MID-WEST RADIO MART

520 South State Street, Chicago, Illinois



UNIVERSAL 3-Piece Adjustable Combination Stand

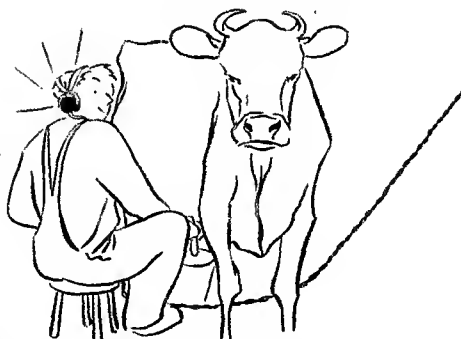
This full utility, all-purpose, adjustable banquet and floor stand outsells any stand on the market — Three telescoping sections — Collapsible for easy transportation. Can be extended to full standing height — Honest, solid construction — Snappily finished in highly polished nickel plate — Lowest price in history. Only \$10.00 list, including 8 suspension springs.

UNIVERSAL MICROPHONE CO., Ltd.

424 Warren Lane

Inglewood, Cal., U. S. A.

Remote Control



WARD LEONARD MIDGET RELAYS

Their use permits sending and receiving from any spot, without reference to location of working equipment. They are made single and double pole, single and double throw for both A. C. and D. C. Send for the new FREE booklet D507 that tells all about these relays and that other equipment you want so badly.

SEND FOR NEW D507 LITERATURE

WARD LEONARD ELECTRIC COMPANY

41 South Street, Mount Vernon, N. Y.

Please send me a free copy of booklet D507.

Name

Street

City and State

Call Signal

Good News for

Amateurs

Single-Signal Filter Unit for \$30 Use with Any Good SuperHet

Our Engineering Dept. announces a new Single-Signal Filter for use with any good Super-Heterodyne. If you have a Scott, a Comet or a "Pro" that needs additional Selectivity of S/S Reception or if you have a home-made Super that isn't selective enough, this new M. & H. Filter will make your set a SINGLE-SIGNAL SUPERHETERODYNE. Only four wires to connect. Simple in operation. Write for detailed description. Wired and tested, \$30.

Weston Model 301, Milliam- meters 0 to 100 MA, D. C. \$3 Purchased from U. S. Navy

All in perfect condition and tested. First come, first served. Only limited quantity.

The New National Super is in stock, less Coils \$26.46
M. & H. Tungsten Contact Keys95c
The prettiest Monitor ever made, wired \$14
Dubilier J04 Mid. 12500 volts, Mica Condensers \$3
RCA Porcelain 50 watt sockets, limited quantity \$1.50
Thordarson Special Plate Transformers, Type T 5448, 800 volts,
each side center tap at 150 MA insulation 3500 volts, special
at \$3.95
Thordarson Special Chokes, Type T5450, 15 Henrys at 250 MA
insulation, 2000 volts, low resistance \$3.53
M. & H. Special Plate Supply Transformer 750, 1000 and 1500
volts, each side — center tap at 200 MA, insulation, 5000 volts
..... \$11.50
M. & H. Special Filament Transformer 2.5, 5 and 7.5 volts, 4 amps
each winding, insulation 2500 volts \$5.25
Thordarson Class B 203A Transformers, per pair \$17.64

M. & H. SPORTING GOODS CO.

512 MARKET STREET

PHILADELPHIA

BLILEY CRYSTALS POWERFUL ACCURATE UNIFORM

BLILEY crystals are scientifically manufactured, uniformly tested, precisely calibrated, and fully guaranteed. Prices consistent with the finest quality.

BLILEY X-cuts available from your dealer: 40, 80, 160M
supplied within 25.0Kc. \$4.50
Within 50Kc. \$5.50, Within 0.5Kc. \$6.50
20M Quartz power crystals within 50Kc. \$12.75
10M, 5M Doubler (14.4-15Mc) within 200Kc. \$11.25
BLILEY Holders (Specify band to be used) \$1.50
165-825Kc S.S. Quartz filter, mounted \$6.50
100Kc Std. Freq. Bar for precision calibrations — supplied
with holder, data. \$8.50

Crystals manufactured to your specifications.
Precision temperature-frequency equipment. Write
for circular Q250.

BLILEY PIEZO-ELECTRIC CO., ERIE, PA.

Radio Operating Radio Servicing—

Prepare for the new Government Radio Operating license examinations; Radio Operator, Marine and Broadcasting. Also Radio Amateur Telegraph and Telephone. Resident courses. Write for booklet "Opportunities in Radio."



West Side YMCA Trade & Technical Schools
4 West 63rd Street, New York City

Financial Statement

BY ORDER of the Board of Directors the following statement of the income and expenses of the American Radio Relay League, Inc., for the fourth quarter of 1932 is published for the information of the membership.

K. B. WARNER, *Secretary*

STATEMENT OF REVENUE AND EXPENSES FOR THE THREE MONTHS ENDED DECEMBER 31, 1932

REVENUE	
Advertising sales, QST.....	\$10,627.89
Newsdealer sales, QST.....	10,682.40
Handbook sales.....	7,335.90
Advertising sales, Handbook.....	1,425.00
Beginners booklet sales.....	252.50
Membership dues.....	13,747.22
Membership supplies sales.....	2,118.15
Interest earned.....	289.06
Cash discounts earned.....	148.10
Bad debts recovered.....	6.92
	<hr/> \$46,633.14
Deduct:	
Returns and allowances.....	\$ 5,193.82
Cash discounts on sales.....	11.11
Exchange and collection charges.....	46.87
	<hr/> \$ 5,451.80
Less reduction of provision for newsstand returns.....	559.36
	<hr/> 4,892.44
Net revenue.....	<hr/> \$41,740.70

EXPENSES	
Publication expenses, QST.....	\$10,618.01
Publication expenses, Handbook.....	2,942.60
Publication expenses, Booklet.....	78.08
Membership supplies expenses.....	1,048.01
Salaries.....	17,956.77
QST forwarding expenses.....	555.76
Telephone and telegraph.....	452.41
Postage.....	1,572.56
Office supplies and general ex- penses.....	1,821.22
Rent, light and heat.....	1,027.28
Traveling expenses.....	800.02
Provision for depreciation.....	307.31
Communications Department field expenses.....	186.63
Headquarters station expenses.....	65.46
Federal tax on checks drawn.....	7.38
Bad debts charged off.....	1,971.57
Total expenses.....	<hr/> 41,411.07
Net gain from operations.....	<hr/> \$ 329.63

Strays

The Institute of Radio Engineers announces the election of Dr. Lewis M. Hull as President of the I.R.E. for 1933. The Vice-President is Dr. Jonathan Zenneck of Meunchen, Germany. Five new directors elected were: R. A. Heising, F. A. Kolster, H. M. Turner, C. W. Horn and M. C. Batsel.

Under the new postal regulations the domestic rate on postcards remains the same as before — one cent for cards conforming to the standard Government size. You fellows who have been sending out cards under the impression that two cents was required might as well save the extra stamp.

HAM-ADS

(1) Advertising shall pertain to radio and shall be of nature of interest to radio amateurs or experimenters in their pursuit of the art.

(2) No display of any character will be accepted, nor can any special typographical arrangement, such as all or part capital letters be used which would tend to make one advertisement stand out from the others.

(3) The Ham-Ad rate is 15c per word, except as noted in paragraph (4) below.

(4) Remittance in full must accompany copy. No cash or contract discount or agency commission will be allowed.

(5) Closing date for Ham-Ads is the 25th of the second month preceding publication date.

(6) A special rate of 7c per word will apply to advertising which, in our judgment, is obviously non-commercial in nature and is placed and signed by a member of the American Radio Relay League. Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, if by a member of the American Radio Relay League takes the 7c rate. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and takes the 15c rate. Provisions of paragraph (1), (2), (4) and (5) apply to all advertising in this column regardless of which rate may apply.

OVER six pounds radio data, circuits, bulletins, 50¢ postpaid. Beyond Rockies, 75¢. Kladag, Kent, Ohio.

US Navy ball bearing dynamometers. Ideal high voltage supply operating from storage batteries. General Electric 24/1500 volt 350 watt \$37.50. 24/750 volt 150 watt \$25. On 12 volts output 375. Westinghouse 27 1/2/350 80 mills \$10. Mounted twin \$15. 500 cycle 500 watts (generator) \$7.50. List. Henry Kienzie, 501 East 84th Street, New York.

SENSATIONAL microphone value—Universal Model "Y"—Experimenters' single-button, watch model type. 200 ohms. Pure gold spot center diaphragm. Only \$2.00, including valuable 1933 general catalog with diagrams. Universal Microphone Co., Ltd., Inglewood, California.

QUARTZ—Direct Importers from Brazil of best quality pure Quartz suitable for making piezoelectric Crystals. Diamond Drill Carbon Co., 719 World Building, New York.

MICROPHONE and meter repairs. Low prices. Quick Service. Sound Engineering Corp., 416 N. Leavitt St., Chicago.

CALLBOOKS—March 1933 number of Radio Amateur Call Book has thousands of new amateur stations, late calls and changes, from all countries. Press, time and weather schedules. High frequency commercials. Yours for \$1.00, or all four 1933 issues for \$3.25. W9FO—610 S. Dearborn, Chicago.

CRYSTALS: Write for new price list and guarantee. Bellefonte Radio Engineering Lab., Bellefonte, Penna.

TRANSFORMERS, reactors made to order. Accurate, dependable. Prompt shipments. Write for quotations. Baker Engineering Laboratories, Fort Wayne, Indiana.

VOLOVOX Dynamic Microphone. A new standard of microphone value, \$7.75 postpaid in U. S. Baker Engineering Laboratories, Fort Wayne, Indiana.

WANTED: leading amateurs to distribute popular brand of crystals. Monitor Crystals 2802 W. Ave., 33, Los Angeles.

NAVY standard receivers, SE1420, SE1220, SE143, overhauled and guaranteed. Mariners Radio Service, 58 W. 23th, New York.

CRYSTALS—1" square. Approximate frequency 1750 or 3500-ke. bands, \$1.25. One-tenth of 1% specified frequency, \$1.50. Ernest Ruland, Natick, Mass.

QSLs. By QST's cartoonist. Samples. "Gil" Cartoon Service, West Hartford.

QSLs, stationery. Samples free. Radio Press, Monroe, N. C.

TRADE Conn slide trombone for low power phone, cw xmitter or what have you. Clarence Tow, Platte, S. Dak.

SELL new National AC-SW5 Thrill Box complete with six sets of coils, 9-200 meters and three extra ham bandspread coils. Head set jacks on side of container complete with RCA tubes. List price \$153.50. Best offer takes it. Jacques Kurtz, 1715 Caton Ave., Brooklyn, N. Y.

BLUEPRINTS for any purpose. W9AYY.

WANT to swap Westinghouse Cooper Hewitt rectifier. Cost \$550. for South Bend lathe or transmitter. P. T. Perdue, Salem, Va.

P.D.C. power pack for 245, cheap. W8ETP.

QSLs, modern type, two colors, \$1. hundred. 200, \$1.50. One color on colored cards 75¢ hundred. 200, \$1. W9AHI, Rushville, Ill.

VELOCITY microphone parts, magnets, coils and ribbon. Campbell Radio Service, Ann Arbor, Mich.

QSL cards that get returns! World's finest! Stamp for samples. W8DED, Holland, Mich.

.001 Dural for condenser mikes, 36 sq. inch, 25¢, .0005 Dural for ribbon mikes, 36 sq. inch, 50¢. Good tubes all kinds and sizes. Buy, sell, trade. W9ER, Timken, Kansas.

2000 volt generator with 3 phase motor, rating 2000 volts. 1 amp. motor, 3 hp. 220 volts. F. O. B. Wilmington, Delaware. Address Clair McCullough, 8 W. King St.

QSL cards. Write for samples. Radio W9EHI, 513 Sparkman Ave., Duluth, Minn.

QSLs, 200, \$1. Samples. Foster Press, Appleton, Wis.

TELEPHONE relays, several types, 50¢ each. Stamp for list. R. White, 11030 Hermosa, Chicago.

PAIR CB210 transformers, \$6. W9ETO.

CRYSTALS, Brazilian quartz, c. o. d. 1750 to 4000-ke. within two kc. of your frequency, \$2. Your specified frequency, \$3.50, oscillating blanks, \$1.25. Unfinished blanks, 90¢. Odds and ends, blanks, 50¢. Single signal finished, \$4.50. Oscillating blanks, \$3. Unfinished blanks, \$2. Grinding instructions, 50¢ 7000 to 7300 kc. within five kc. of your frequency, \$3.75. Wm. Threm, W8FN, 4021 Davis Ave., Cheviot, Ohio.

TRADE one used double button Ellis microphones model 20N—good as new—for one good DeForest 545. W7BEQ.

WANTED: National SW5 a.c. using 45s in output with National power supply. W4BSN, 1430 N. 34th St., Birmingham, Ala.

RIBBONS for ribbon microphones. Tough, thin, corrugated duralumin ribbons 1/4"x2 1/4". Mailed prepaid on receipt of \$1. E. R. Meissner, 2329 Carlton St., Berkeley, Calif.

SWAP L. C. Smith standard No. 5 typewriter, elite type for ham equipment. W9AF.

CRYSTALS—for this month 95¢ each. Guaranteed to be satisfactory in every way. White Radio Lab., Peru, Ill.

JACOBS separators made of polished hard rubber; equipped with brass fittings, provide rapid and efficient 6 inch separation of two wire Zepp antenna feedlines. Now \$3. per dozen. Charles F. Jacobs, (W2EM). 270 Lafayette St., New York, N. Y.

WESTERN Electric or Baldwin tones, fine condition, \$2. or swap. WINJ, P. O. Box 92, South Braintree, Mass.

W2AEN has complete nearly new professional Leedy trap drum set. Want trade for radio equipment. Write for details. Every offer considered.

TRADE man's diamond ring for transmitter, station equipment. Over half-karat, value \$280. E. J. Goodison, 300 E. Edward St., Endicott, N. Y.

1000W transformers, 1100-2200-4400 volts each side center up. Mounted on marble, \$13.50. Guaranteed. F. G. Dawson, 5740 Woodrow Ave., Detroit, Mich.

OMNIGRAPHES, Teleplexes, Vibroplexes, meters, transformers, receivers, transmitters, converters, bought, sold, traded. Ryan Radio Co., Hannibal, Mo.

CRYSTALS: Guaranteed excellent oscillators, 160 or 80 meters, \$1.35. 1" Blanks 15¢—\$6.00 doz. 3/4" Blanks 50¢—\$4.80 doz. Irregular shapes 25¢. Grinding abrasive, coarse—medium—fine 65¢, each grade 25¢. Standard dust-proof plug-in Holders 75¢. All items unconditionally guaranteed and postpaid. Thousands of Fisher Crystals are now being used by satisfied Amateurs throughout the world. Fisher Laboratory, 1200 E. Nevada, El Paso, Texas.

MUST sell REL278, like new. Complete with coils, tubes, \$19. W6HAT, Alhambra, Calif.

QSL, 100 one color, 50¢. Two colors, 80¢. Samples. 2143 Indiana Ave., Columbus, Ohio.

CORNER posts for building shielding, cabinets. R. H. Lynch, W6DZL.

QSLs—200 single color, \$1. Samples. W9JRK, Indianapolis.

FINEST QSLs. T. Vachovetz, Elmsford, N. Y.

CRYSTALS: x cut, 1" or 1 1/6" sq., accurately and neatly finished, \$2. Oscillating blanks with compound, \$1. Holders, \$1.25. W8DLM, Rochester, Mich.

Hipower crystals. See page 65.

CRYSTALS ground from the finest Brazilian Quartz. Absolute satisfaction guaranteed or your money refunded. 160 and 80 meter bands X or Y cut \$3.00. 40 meters \$5.50. 1" square. Ground to your approximate frequency. Calibration accuracy .1%. Sent c.o.d. R. C. A. Radio Lab., 113 Riegel St., Dayton, Ohio.

VIBROPLEXES, new, \$12. Rebuilt, \$6.50 to \$10. Lydeard, 28 Circuit, Roxbury, Mass.

TRANSFORMERS—46's class B, \$4.50 pair, 203A's, class B, \$9.95 pair. Something new, 70 watts of audio from 46's. Write for circular. W8UD, Douglas, Mich.

WOODEN feeder spreaders complete, 10" size 5¢ each. Other sizes made to order. Henry Y. Jones, 715 E. Commerce St., Shamokin, Pa.

CRYSTALS: \$2. postpaid airmail. Smith-Precision power type; accuracy 0.05%; unconditionally guaranteed. Over 200 sold. W6BCX, Santa Maria.

TRANSFORMERS—450 watt, 1500-2000-3000 c.t., \$10. Quotations given. Frank Greben, W9CES, Phone Craw 2050, Accurate Radio Service, 2920 W. 22nd St., Chicago, Ill.

POWER supply — 500 volts, 200 mls, three filament windings. Suitable rack mounting. Reasonably priced. Write for description, photo. W9KVN, Kirksville, Mo.

QSLs, \$56, guaranteed finest. Free samples prove it! W6GPJ, Sandy, Utah.

MASTS for amateur or commercial. Write for details. W9BTG, Seneca, Kans.

QSLs by Maleco. For 2 years the finest in the country. Free samples. Maleco, 1512 Eastern Parkway, Brooklyn, N. Y.

SELL or trade — Emerson motor generator, 1100 volts, 350 watts, \$30. Westinghouse motor generator, 750 volts, 150 watts, \$20. Cline Deers, Washington C. H., Ohio. Route No. 5.

150 two color QSLs, \$1. postpaid. Free samples. W9GOF, D. Maxham, Mishawaka, Ind.

WANTED — used radio correspondence course, analyser. VE5HF, Vernon, B. C.

TRADE power crystals, quality holders — what have you? Sell parts. Get National FB7 from us. W9DOQ, Route One, Duluth, Minn.

FREQUENCY meters for 3500, 7000, 14,000 kc bands, including chart, \$5. plus postage, additional frequencies, \$1. each frequency or wave meter calibrated, \$1. a band, receivers and transmitters built to your specifications. All work guaranteed. Andrews Radio Lab., 3520 Wisconsin St., Oakland, Calif.

CRYSTALS — 80 or 160 — inch square, \$2. Less than inch \$1.50. Oscillating blanks, \$1.25. W2BVE, Hollis, L. I.

COMET Pros, \$88; SW3s, \$20.88; Thermionic 866s, \$1.95; Hoyt milliammeters, \$1.50; power crystals, \$4. Bliley holders, \$1.50. Write for list; price of any apparatus. Henry's Radio Shop, Butler, Mo.

QSLs, 90¢ a 100. 2 colors. W9DGH, 1816 5th Ave., N., Minneapolis, Minn.

WILL trade — Baird table model shortwave and television outfit complete with 8 tubes — horizontal scanning outfit with class B amplifier and 5 sets of octo-coils. Need 203A tubes class B transformers, etc. Can use anything. What have you? Make offer. All correspondence answered. Milton D. Delson, W2NZ, 315 W. 106th St., New York City.

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CONDENSER microphone heads, precision built quality throughout, in kit form for the extremely low price of \$6.65. A 36 stamp brings descriptive bulletin. Sound Recording Studios, 147 Cooper Ave., Peoria, Ill.

METERS repaired properly at reasonable rates. Electrical Instrument Labs., 307 Colvin Ave., Buffalo, N. Y.

MINIATURE QSLs, \$1.50 thousand. Automatic card case free. Cheaper to exchange at conventions and hamfests than regular QSLs. Sample on request. Harry Legler, Hiawatha, Kansas.

TRANSMITTING and receiving equipment manufactured to order. Holmes C. Miller, Radio Engineer, Box 105, Palo Alto, California.

SELL — 15 watt radiophone-cw xmitter complete. \$30. W8FUJ, Utica, Mich.

MERCURY are complete, \$17.50. Pair WE219Ds. Best offer. W9ERU.

TUBES, filter condensers, meters, transformers and miscellaneous accessories, cheap. List. Howard, 5508 Fulton St., Chicago.

FREE: Plugin, dustproof holder with G. R. plugs with each crystal purchased. Crystals: X cut, 1" square ground to maximum output at your approximate specified frequency. More power, better frequency control with our crystals. 0.05% calibration. 1750 and 3500 kc. bands — \$4.50. 7000 kc. — \$5.50. Other frequencies, ovens and oscillators for commercial use quoted on. 4 years in business. Precision Piezo Service, 427 Asia St., Baton Rouge, La.

YOUR radio question answered quickly. Send problem and ask for price or request rate card. Robert S. Kruse, R.F.D. No. 2, North Guilford, Conn.

SEE our display advertisement. Relay racks, converters. Rectifier Engineering Service.

"GANGSTERS" — W6HM vividly described anti-amateur attacks. February R/9, 20¢, Box 666, Hollywood.

SPECIAL heavy class B transformers for four 46s max. rating. All trans. no fancy case. Pair, \$12.50. Chas. H. Warner, 925 Lafayette, Chicago.

WANTED — National AC-SW3 or SW5. W1CBT.

JEWELL 444 analyser complete, \$65. W2CQG.

SELL — xmttr, revtr, cheap. Hill, 115 High, Fitchburg, Mass.

TUBES — 212Ds, new \$20. used \$15. 261As (100 watt 203A) \$8. 211Es, \$3. 211Ds, \$4. 852s, \$9. 860s, \$12. All RCA or DeForest. Guaranteed. Buy, sell, trade. W9ER.

CONDENSERS — Not the ordinary kind but a limited quantity of brand new commercial type oil immersed power factor correction condensers, 8 Mfd. units conservatively rated at 1000 volts \$5.00 each or \$9.00 per pair. Have limited number of other sizes and ratings — write Ex-W4XC, 2710 Harvard Blvd. Dayton, Ohio.

TRADE — xmitting apparatus for good outboard motor and boat. Have 250 and 50 watters, meters, motor generator, transformers, etc. W9EXP, Sutherland, Nchr.

QSL cards, message blanks, stationery, snappy service. Samples free. Write today. W1BEF, 16 Stockbridge Ave., Lowell, Mass.

203As brand new, Westinghouse or GE \$12.00. Class B transformers, pair 210 — \$5.50; for 203As — \$8.50. Counterbalanced Cardwell 166Bs — \$20.00. 10,000V heavy duty 866s — \$2.50. New RCA UX250s — \$1.75. Weston type 301 milliammeters (some new, all new condition, most all ranges) \$3.75 204As — \$20.00. 212Ds — \$16.00. Diaphragms installed in WE mikes \$5.00. List. Want 861s, etc. Ewing, 1057 Pratt Blvd., Chicago.

FREE QSLs. W8BVE, Prospect Park, Franklin, Pa.

QSL's. New samples! Toot Press, Appleton, Wisconsin.

VELOCITY microphone kit, \$5. A. C. bandsetter, \$19.75. W8ALK, Cincinnati.

SOCKET hole die punch 1 1/4" clean hole in 1/16 sheet iron, 1/2 aluminum, 75¢. C. O. D. Stoughton Mfg. Co., Oak St., Portland, Maine.

NATIONAL ACSW5 with power supply and speaker. Coils 15-600 meters. Complete perfect shape, cheap. Finn, 715 E. 4th St., Brooklyn, N. Y.

FOR sale — Holtzer Cabot motor generator in perfect condition. Shunt 600 volts, 1750 RPM. Price — best offer. H. M. Spring, 169 Willow St., West Roxbury, Mass.

TRANSMITTING filter condensers. Black ducoed steel cased. All voltages DC working potentials. Tested 50% overload. Real commercial jobs! 2000 volt 2 mfd. \$3.95; 4 mfd. \$6.25. 3000 volt 2 mfd. \$6.95; 4 mfd. \$11.95. 4000 volt 2 mfd. \$9.95; 4 mfd. \$18.00. J. S. Huffman, W5AUB, Tupelo, Miss.

CARDS — yellow with 1 1/4" black letters, very commercial \$1 — 100; \$1.75 — 200. Samples. W1ALJ, Church St., Peace Dale, R. I.

247 TNT transmitter, 500 volt pdc power supply, tubes, key, filter, etc., \$20. Arco calibrated monitor, 20, 40, 80 meter coils, \$5. Harold Finley, Box 104, Bosworth, Missouri.

EX-OPERATOR organizing classes for code practice in New York, beginners and advanced. All speeds. If interested write name and address to Hart, 3547-34 St., Astoria, L. I.

FOR sale — two five-meter transmitters and receivers in aluminum cabinets. Excellent condition. Duplex phone record 75 miles. Best offer — will sell at loss. John M. Murray, W2AMD, 1470 Yale Station, New Haven, Conn.

Q R A SECTION

50c. straight with copy in following address form only:

W3DAD — F. T. Hines, Jr., 2928 — 44th Place, N. W., Washington, D. C.

W3WU — Maurice W. Downs, 810 Quintana Pl., N. W., Washington, D. C.

W1MK, A.R.R.L. Headquarters

R. B. Parmenter, Chief Op "rp"

The following calls and personal sines belong to members of the A.R.R.L. Headquarters rank:

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W1BAW R. T. Beaudin "rb."

W1BDF E. Handy "th."

W1CBD-W2ZZF Clinton B. DeSoto "dc."

W1ALJ J. Lamb "jm."

W1DF Geo. Grammer "bg."

W1EH K. B. Warner "ken."

W1ES A. A. Hebert "ah."

W1GFS F. Cheyney Beekley "beek."

W1RFP E. B. Parmenter "rp."

W1SZ-W1BZ C. C. Rodimon "rod."

W1UE E. L. Battey "ev."

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Your nearest dealer is entitled to your patronage. You can trust him. He is equipped with a knowledge and understanding of amateur radio. He is your logical and safe source of advice and counsel on what equipment you should buy. His stock is complete. He can supply your needs without delay. His prices are fair and consistent with the high quality of the goods he carries. He is responsible to you and interested in you.

Patronize the dealer nearest you—You can have confidence in him

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DETROIT, MICHIGAN Radio Specialties Company 171 E. Jefferson Avenue Ham Supplies — National & Hammarlund Sets and Parts	ST. LOUIS, MISSOURI Walter Ashe Radio Company 1100 Pine Street W9FIS in charge of the oldest and largest parts store in St. Louis
HARTFORD, CONNECTICUT Radio Inspection Service Company 227 Asylum Street Complete line of guaranteed parts	ST. PAUL, MINNESOTA Lew Bonn Company 2484 University Avenue Rex L. Munger, W9LIP, Sales Engineer Complete Stock Radio Wholesaler
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KANSAS CITY, MISSOURI Radio Laboratories 1511 Walnut Amateur Headquarters — Complete Stock — Quality Parts	SPRINGFIELD, MASSACHUSETTS T. F. Cushing 345 Worthington Street An amateur, endeavoring to sell good parts
MIAMI, FLORIDA Pan American Radio, Inc. formerly Fessenden-White 1809 NE Second Avenue Everything in Radio	SYRACUSE, NEW YORK Roy C. Stage, W8IGF Complete stock of standard Ham & BCL parts Standard Discounts. Free technical service by WBAOW
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Quoted from QST's advertising rate card.

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Buy Only
From
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• See Editorial in this issue of QST

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April 1932 was a "Humdinger" for LEEDS Radio Bargains—April 1933—will be still Better

Heading the List of Big Surprises

NATIONAL—SW45

100 Lucky "Hams" will thank
us for this buy of the year.

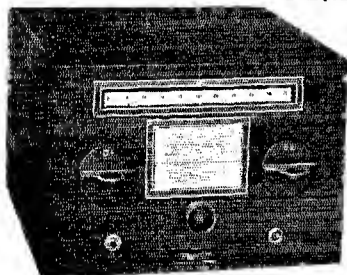


Absolutely perfect SW45 in factory sealed cartons. A.C. 5-tube sets—employing two 35's, two 45's, one 27 tubes. These receivers have never been sold below \$40.87. Now for this group of 100, first come first served.

\$16.50

(LESS COILS)

Complete with 4 sets of coils ranging from 14½ to 115 meters. Special \$26.50
Coils from 9 to 2000 meters available at our regular wholesale discount of 40% and 2%.
Extra Special "LEEDS" humless SW45 power supply, with 7" Dynamic speaker . . . \$13.50
R.C.A. 280 tube for this supply53
Complete set of 5 genuine R.C.A. tubes for these sets, net 3.74



NATIONAL FB 7

described in March issue.

Also all the latest type National
sets in stock at lowest wholesale
prices.

Special GENERAL RADIO Bargains

334-M—Metal end pl. ver. .00025 cond. S.L.W. .50
247-K—.00025 Hard rub. end pl. S.L.W. .50
374-N—.00035 S.L.F. .95
565-A—Half wave 200 w. transformer 1-600
v. winding 2-7½ v. 2½ A winding and
1-2½ v. 4 amp. winding \$2.50
473—Dial impedance unit for audio amp.
cont. two 55 H. ch. coupling cond. . . . \$1.50
369—Parallel feed imp. 98 H. 15 M.A. .69
285-H—Audio trans. — 6:1 ratio . . . \$1.20
285-D—Audio trans. — 2.2:1 ratio . . \$1.20
271—30 Kc. C. transformer \$.25
277—Bakelite coil form 2½" O.D. drilled
to take G.R. 274 plugs \$.25
266—Doublech. formed. size power supp. \$1.75
558-P—Amateur band spread frequency
meter reg. \$18. Now \$10
Subject to prior sale

Leeds 866 transformer — 2½ v. 10 amp.
Center tapped, 10,000 v. insulation. . . \$2.75
Leeds mounted fil. trans. 7½ v. 5 A.C.T. \$2.95
Leeds mounted 10 v. 7 amp. fil. trans. with 3
primary line taps to insure correct v. \$3.95

Leeds mounted fil. trans. 2½ v. 10 amp. 1000
v. insulation for receiver or 888 fil. in low vol-
tage power supplies \$1.15
Leeds single button Mike trans. . . . \$1.25
Leeds double button Mike trans. . . . \$1.45
Leeds 2½ v. — 6 amp trans. \$.95
Leeds 2-2½ v. winding 5 amp; can be used
for 5 v. — 1000 v. insulation. . . . \$1.45

Acrovox Resistors and Condensers in stock at
lowest wholesale prices.

All parts for the amplifier unit for Grammer's
low powered crystal transmitter in stock.
Complete kit \$7.50
Oscillator doubler kit \$12.75
Power supply kit \$5.75

Leeds "SUPREME" single Signal Super
ready for delivery \$95
See our March adv. for complete details.

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The new G.R. porcelain coil forms in stock.
Designed especially for low powered trans-
mitters, buffers, &c. These efficient forms
may be put to a wide variety of uses.
677-U coil form 35c 274-J jacks 5c
677-PL spacers 15c 274-P plugs 6c
678-P plug base 35c 678-J jack base 35c

Navy Type Telegraph Key

List \$3.60 Navy knob — ½" tungsten con-
tacts. The balance \$1.10

Genuine Type G Baldwin Phones

\$12.00 List—Mica diaphragm. Limited
quantity—only 2 pair to a customer.
Special \$3.75
Imported 400 ohm featherweight phones.
Special \$1.35
Acme 2000 ohm featherweight phones. \$1.15
Acme 4000 ohm featherweight phones. \$1.45
Kellogg and Ampison Single-Button Micro-
phones. Ideal for portable transmitter. Extra
Special \$1.75

Weston 566 Set Analyzers

Brand new, original cartons, up to the minute;
factory guarantee. Complete with 6 and
7 prong adapters. Now you can secure these
analyzers at better than the distributor's
price, only \$55.95

A few of the tube checkers and oscillators
advertised last month are still available at
sensationally low prices; listed in Feb. QST
Descriptive bulletins on request.

Cardwell 164-B—.00025 Double spaced
transmitting condenser. \$2.75
Cardwell 147-B—.00045 Double spaced
transmitting condenser. \$5.25

Na-aId 4-5-6 prong coil forms, each . . \$1.15
Complete set of 4 coils ranging from 15 to
200 meters, wound for .0001 to .00014 con-
denser \$1.20

No. 398 Gold Bug Automatic Transmitting Key

We've sold hundreds of these keys at \$4.45.
For a final clean up. . . . \$3.95. During April
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New Low Crystal Prices

Y cut crystals 160-80 M. bands .1 of 1%
accuracy \$3.50
Y cut 160-80 M. oscillator blanks . . . 2.00
X cut 80 M. .1 of 1% accuracy 4.75
X cut 40 meter Crystals, random fre-
quency 6.50
Leeds dustproof holder. 1.45
DeLuxe model. 1.89
General Radio crystal holder. 2.25

KENYON TRANSFORMERS are available
to fill every amateur and replacement
purpose. Space does not permit a complete listing
of the hundreds of Kenyon quality units.
Just look at these items, the prices are
typical of the entire line.

K-40 List \$3.75 110 v. 60 cycles H V 650
c. t. 40 ma. — 5 v.-2 amp. 2½ v.-5½
amp. \$95
K-67 List \$4.25 110 v. 60 cycles 700 c. t.
75 ma. 5 v.-2 amp.; 2½ v.-9 amp. . . . 1.95
K-90 List \$5.50 110 v. 60 cycles 750 c. t.
100 ma. 5 v.-2 amp.; 2½ v.-7 amp.;
2½ v.-12 amp. 2.25
KR-5—110 v. 60 cycles; 1100 v. c.t.
150 ma. 2-7½ v. 2.5 amp. 1½ v. 6.3
amp.; 2½ v.-10 amp. List \$7.75.
Special 3.95

50% Discount on all Flechtelm Con-
densers from the new low list price

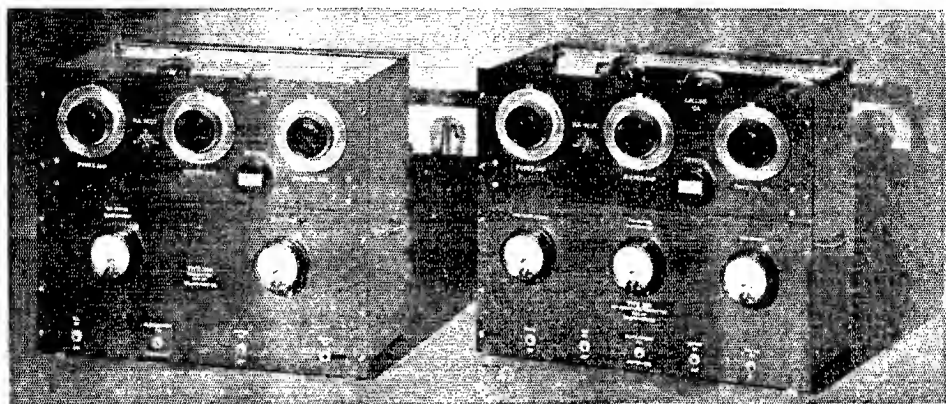
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New York Headquarters for Transmitting Apparatus

MAIL ORDERS FILLED SAME DAY
C. O. D. Orders Must
Be Accompanied by
10% Deposit
These Special Prices for
April Only

Two New **COLLINS TRANSMITTERS** **32 A and 32 B**



At New Low Prices!

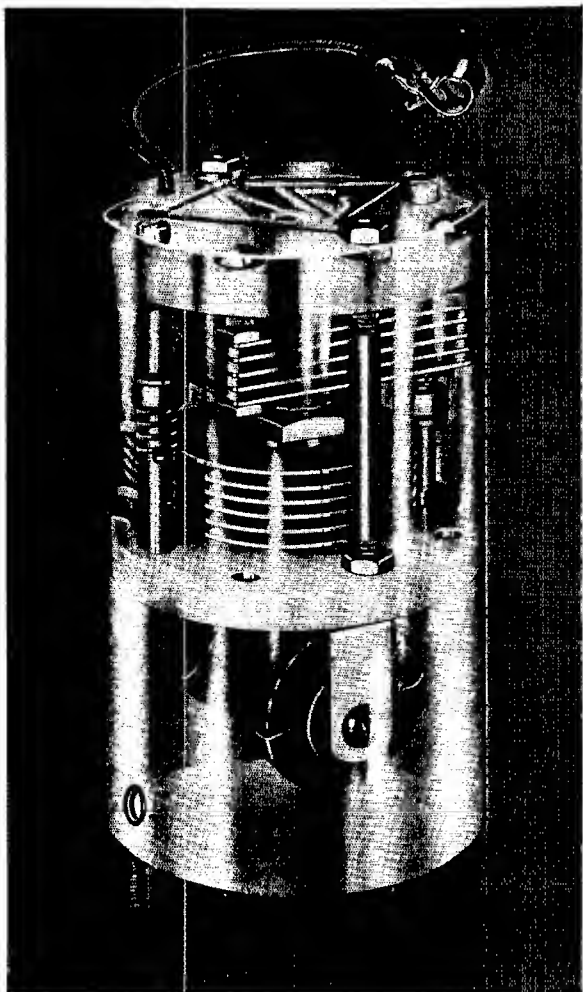
In addition to retaining the distinctive features of construction and design which have made Collins Transmitters outstanding, these two latest units embody many new refinements. The 32 A and 32 B are fully described with circuit diagrams in a *free* bulletin. Write for it before you rebuild your present outfit.

32 A.....CW only
32 B.....CW-Phone
20-25....Watts Output
3 Stage Crystal Control
Class B Modulation
Dual Power Supplies

COLLINS RADIO COMPANY

Cedar Rapids, Iowa

FOR • THAT • SINGLE-SIGNAL • RECEIVER



Actual Size. U. S. Patents Nos. 1,656,532, 1,713,146.
Others pending.

For replacement or
set construction

List price **\$5.00**

(Less usual trade discount)

The NATIONAL Air Dielectric Tuned I. F. Transformer described in the 10th Edition of the A.R.R.L. Handbook has been completely redesigned.

- Micrometer Tuning — Velvet Vernier Type
- All Peaking Adjustments at Top of Shield
- Double Bearing Precision Condensers
- Self Locking Rotors
- Isolantite Insulation
- Adjustable Coupling
- New Type of Litz Wound Coil.
- 450 to 550 KC Tuning Range
- Non-resonant Aluminum Rotor and Stator Plates
- Electron Coupled Beat Frequency Oscillator Units with Genuine Velvet Vernier Knob Tuning
- Standard Mounting

Standard Equipment on the Single-Signal AGS and available for the Standard AGS, the FB-7, and the FB-X; it is completely interchangeable with the standard unit and may be substituted at any time.

NATIONAL COMPANY, INC., MALDEN, MASS.





HAMS!

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You'll dodge a lot of grief if you side-step the fancy, 100% plus claims being made about "performance . . . power . . . capacity" for less money than a Burgess SuperB Battery costs.

Burgess is a pioneer in making "B" batteries. They have made them for years and their batteries have been used by every important scientific expedition, because experience proved that no other battery was as dependable under the most severe extremes in temperature. Wherever human life has been at stake, Burgess Batteries have been used. Ask any radio engineer.

Tests today show that Burgess Batteries are even better than they were a year ago. A simple method for you to find out what people think of Burgess Batteries is for you to check through the back numbers of your own magazine: Q. S. T. Look at the illustrations . . . and you'll see Burgess Batteries in them. You can recognize them by their famous black and white stripes.

You can depend upon Burgess Batteries. They are worth every cent that they cost.

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